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CONFIDENTIAL

OPERATIONAL REPORT LESSONS LEARNED

1 NOV 1966 TO 31 JAN 1967

12 TH COMBAT AVIATION GROUP

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Regraded unclassified when separated from basic document

CONFIDENTIAL

DEPARTMENT OF THE ARMY
HEADQUARTERS, 12TH COMBAT AVIATION GROUP
APO 96491

AVGC-SC 6 March 1967

SUBJECT: Operational Report Lessons Learned (ORLL) (RCS CSFOR-65) for Quarterly Period Ending 31 January 1967

TO: SEE DISTRIBUTION

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SECTION I
SIGNIFICANT UNIT ACTIVITIES

A. (U) GENERAL: The 12th Combat Aviation Group continued to provide non-divisional Army Aviation support to a significantly increased number of ground tactical units in the III Corps Tactical Zone. In order to provide command and control for new units, the Buffalo Combat Aviation Battalion was activated provisionally on 15 January 1967. The arrival of the 269th Combat Aviation Battalion will provide an additional command and control capability and raise the total number of battalions assigned to Group to five. Special mission capabilities were further developed to include the employment of the XM-47 Gravel Mine, the airlift of 155mm howitzers by CH-47A helicopter, additional FIREFLY systems employed, and continued use of helicopter mounted smoke generators. In the month of November, the greatest strain was placed on our limited amount of aviation assets. Support of Operation ATTLEBORO in November produced the following statistics: hours flown 5,658, cargo tons 6,404, passengers carried 46,320. Operation ATTLEBORO was the largest airmobile operation conducted up to that time. The Army Aviator's endurance was severely tested during that period. Average flying time per assigned aviator in the 173d Assault Helicopter Company was 115 hours with a high time pilot flying 176 hours in November. There is no doubt that the aviators and other personnel of the 12th Combat Aviation Group have accomplished their combat mission.

B. (U) MISSION:

1. The 12th Combat Aviation Group provided Army Aviation support to CG, II FFORCEV, Senior Advisor III ARVN Corps and Senior Advisor IV CTZ. At the direction CG, II FFORCEV, provides aviation support to US, RVN, and FWMAF Forces in III CTZ.

2. Provided Army Aviation support forces as directed by

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COMUSMACV for support of US, RVN, and FWMAF Forces in IV CTZ.

3. Commanded (less OPCON where specified) and administered assigned and attached Army Aviation and support units.

C. (C) ORGANIZATION: (Annex A and B)

1. Organization of the 12th Combat Aviation Group during the reporting period included the following units, with headquarters located as indicated:

a. 12th Combat Aviation Group, LONG BINH

b. 11th Combat Aviation Battalion, PHU LOI

c. 145th Combat Aviation Battalion, BIEN HOA

d. 222d Combat Support Aviation Battalion, VUNG TAU

e. 269th Combat Aviation Battalion, CU CHI

f. Buffalo Combat Aviation Battalion, (Provisional)

BE R C T

In addition, these units had sub-elements stationed at PHUOC VINH and LAI KHE, as well as at field positions where called for by operations.

D. (U) COMMAND: Significant changes of command in 12th Combat Aviation Group during this reporting period were:

1. On 1 Dec 66, LTC Samuel P. Kalagian was named Deputy Commander of 12th Combat Aviation Group, replacing LTC Howard M. Moore.

2. On 1 Dec 66, LTC Howard M. Moore assumed command of the 145th Combat Aviation Battalion from LTC Walter Jones.

3. On 5 Jan 67, LTC Thomas E. Thompson assumed command of the 222d Combat Support Aviation Battalion from LTC Athol M. Smith.

4. Headquarters and Headquarters Company of the 269th Combat Aviation Battalion arrived in RVN in January 1966 commanded by LTC Byron E. Sheppard

5. The Buffalo Combat Aviation Battalion (Provisional) was activated on 15 January 1967 by LTC James M. Leslie.

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E. (U) PERSONNEL:

1. Administration:

A continuing high level of administrative workload has existed during the past quarter. With the assignment of new units, additional attention has been placed on infusion of the new units with in-country units to reduce the annual rotational humps. Continued emphasis on proper reception, processing, and initiation of correct personnel requisition procedures should reduce the additional effort required to support the new units.

A monthly staff assistance visit to each of the assigned battalions has proven to be extremely valuable in exchanging information and resolving problems.

No administrative problems presently exist which are beyond the capability of this headquarters to solve.

2. Personnel:

a. GENERAL: The personnel status during the reported period was characterized by frequent and confusing changes in personnel authorizations:

(1) USARV approval and forwarding to USARPAC of MTOE 1-77G provided an increase of 1 officer, 11 warrant officers, and 37 enlisted men in the personnel authorization of each UH-1 company except the 334th Aviation Company, which is organized as an armed helicopter company. The increased personnel authorization was not accompanied by an increase in assigned personnel. However, UH-1 companies are staffed with enlisted personnel in accordance with MTOE 1-77PAC as approved by USARV.

(2) All other MTOE's pending were cancelled.

(3) The 57th, 61st, and 134th Aviation Company (CV-2) and their three supporting transportation detachments were inactivated on 1 January 1967 as a result of transfer of CV-2 aircraft to the USAF. This resulted in a reduction in authorization of 126 officers and 612 enlisted men.

(4) The arrival in-country in late January of the 213th Aviation Company (Air Mobile Medium) (CH-47) and the 326th TC Detachment increased the authorized strength by 40 officers, and 231 enlisted

men. Assigned strength was increased by 36 officers and 228 enlisted men.

(5) The 269th Combat Aviation Battalion arrived in-country in late January resulting in an increased personnel authorization of 23 officers, 88 enlisted men and an increase in assigned strength of 23 officers and 85 enlisted men.

(6) Sufficient personnel have been available to meet all operational missions during the reporting period. Paragraph b below shows some decline in personnel strength; however, the group still remains well above authorized enlisted strength and slightly above the aviator manning level. DEROS humps have been largely eliminated except for the two units which arrived in January. Infusion of these two units has started.

(7) During the reporting period the 12th Combat Aviation Group organized the Headquarters and Headquarters Company, Buffalo Combat Aviation Battalion (Provisional) pursuant to General Order 1914, Headquarters, 1st Aviation Brigade, 27 December 1966. This General Order established strength levels of the Buffalo Battalion at 18 officers, 3 warrant officers, and 88 enlisted men, but, did not provide authority for requisitioning these personnel. Accordingly personnel for the Buffalo Battalion have been temporarily provided by depleting other 12th Combat Aviation Group resources.

b. Officer Personnel:

(1) The table below shows the status of rated army officer personnel strength during the reporting period. The table excludes all officer positions and personnel of the three CV-2 companies and supporting transportation detachments.

Auth	Asgd	PDY
	1 Nov 66	
729	788 (109%)	663 (91%)
	1 Dec 66	
729	861 (118%)	670 (92%)

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	1 Jan 67	
Auth	Asgd	PDY
813	857 (10.%)	691 (85%)
	31 Jan 67	
939	936 (100%)	799 (85%)

The increased officer authorization for the UH-1 companies without a corresponding increase in assigned officers accounts for most of the short-fall shown on 1 January and 31 January 1967. Assigned and present for duty strengths have also been reduced by the requirement to reassign or divert 75 aviators from 12th Combat Aviation Group to the 17th Aviation Group in late November and December.

(2) The table below shows the trend of the ratio of commissioned officer aviators to warrant officer aviators:

	1 Nov 66	
	Auth	Asgd
Comm - 46%		54%
WO - 54%		46%
	1 Dec 66	
Comm - 46%		55%
WO - 54%		45%
	1 Jan 67	
Comm - 42%		61%
WO -58%		39%
	31 Jan 67	
Comm - 41%		61%
WO - 59%		39%

During the reporting period the shortage of warrant officer aviators has increased, however, the number of Majors assigned to 12th Combat Aviation Group has increased from 3.9 times authorized strength to 4.2 times authorized strength.

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During the reporting period the only signigicant shortage of any particular aviator skill or MOS was in MOS 6710, aircraft maintenance technician. The availability of school-trained aircraft maintenance technicians has been approximately 50% of authorization. There have been no significant shortages of non-aviator officers.

c. Enlisted personnel:

(1) The table below shows the status of enlisted personnel strength during the reporting period. Prior to 1 January 1967 this table included personnel assigned to the CV-2 companies and detachments.

Date	Auth	Asgd	PDY
1 Nov 66	3690	4820 (130%)	4558 (123%)
6 Dec 66	3690	4786 (130%)	4610 (125%)
1 Jan 67	3337	4355 (130%)	4221 (126%)
31 Jan 67	3893	4833 (124%)	4455 (114%)

(2) During the reporting period, enlisted personnel resources were not in excess of actual needs. Although enlisted strength has been well over the authorization, the additional personnel were needed to perform assigned missions. If all MTOE now pending approval were approved, the authorized enlisted strength of the Group would be 4325. On this basis, the present for duty strength of the Group would now be 103% of authorized strength. As of 31 January 1967, significant enlisted personnel shortages are:

MOS	SHORTAGE
05C20 - Radio Teletypewriter Operator	25 (71%)
05C40 - Radio Teletypewriter Operator	2 (40%)
31G4P - Tactical Communications Chief	4 (80%)
51M40 - Firefighter	4 (80%)
56A10 - Supply Handler	12 (30%)
67W20 - Helicopter Technical Inspector	18 (47%)
68A10 - Aircraft Components Repair Apprentice	19 (24%)
71B20 - Clerk Typist	12 (30%)
76A10 - General Supply Clerk	13 (34%)
76K40 - General Supply Specialist	8 (24%)

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3. SUNDRY FUNDS, CLUBS & MESSES:

An additional three sundry funds were authorized during the reporting period, bringing the total sundry funds in the Group to fourteen. Hq, USARV has directed that nonappropriated fund messes be converted to field ration messes not later than 31 March 1967. Plans for conversion are being prepared and conversion will be scheduled to meet the required completion date.

Clubs and messes continue to be below desired standards in the financial administration of their funds. Direct coordination has been effected with the USARV Comptroller's Office regarding assistance in auditing these funds. USARV Comptroller has been unable to conduct the desired audits and subordinate units have been encouraged to select qualified officers to conduct interim audits of funds. The 145th Combat Aviation Battalion has been particularly successful in uncovering problem areas by use of their own audit team.

4. UNIT FUNDS:

Establishment of individual unit accounts with in-country banking facilities is in progress, and five companies have received control of their bank accounts. All other companies have established accounts; however, they have not received nesessary check books allowing them to utilize their accumulated funds. Receipt of the additional check books will allow all company size units to operate a normal unit fund. No problems are anticipated.

5. AWARDS AND DECORATIONS:

During this period 5375 recommendations were submitted and 11,021 awards received. The difference is due to catching up on previous submissions. Use of spot awards has proven quite successful in providing timely recognition for deserving individuals.

a. The following is a break out of recommendations submitted and awards received.

	SUBMITTED	RECEIVED
DISTINGUISHED SERVICE CROSS	1	2
SILVER STAR	9	3
LEGION OF MERIT	6	5
DISTINGUISHED FLYING CROSS	64	47
SOLDIERS' MEDAL	13	6
BRONZE STAR	186	189
AIR MEDAL "V"	158	213
AIR MEDAL	4,719	10,221
ARMY COMMENDATION MEDAL	219	335
CROSS OF GALLANTRY (VN)	75	26

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b. During the reporting period the large backlog of pending awards has been reduced. Presently, a period of approximately two weeks is required for processing and receipt of an award which can be approved at 1st Aviation Brigade. The shortage of certificates, Bronze Stars, and Air Medals which existed during the last quarter has been corrected.

c. USARV has initiated a program to insure that all ponding awards for deceased persons are consolidated and available for presentation to next-of-kin at one ceremony. A system for special handling of posthumous awards has been initiated within the Group.

d. Emphasis has been placed on recognizing all deserving individuals for successful performance in Vietnam. Increased use of the USARV Certificate of Achievement has been made to recognize those individuals not meeting the requirements for higher awards. Receipt of pre-signed USARV Certificates of Achievement has assisted this program.

e. The administrative requirements for submission of awards has been vastly increased by the use of 1st Aviation Brigade Form 21-R. Only one individual may be submitted on each form and a lot of additional personnel data is required. The superseded form, 1st Aviation Brigade Form 21, allowed thirty individuals to be submitted for awards on one form, thereby reducing the required amount of paperwork.

6. INFORMATION PROGRAM:

a. Increased responsiveness has been noted in all areas with an increase of 22% in home town news releases and a 580% increase in total photos released to news media. During the reporting period the following were submitted to the news media:

(1)	Hometown releases	416
(2)	Hometown photos	222
(3)	News releases	157
(4)	News photos	136

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b. Members of 12th Group Units were featured on nation-wide telecast three times during the reporting period. The 71st Assault Helicopter Company appeared on CBS television on Thanksgiving Day. On 3 December 1966 the "Gunslingers" of the 128th Assault Helicopter Company were filmed by CBS for a nation-wide viewing of armed helicopter techniques in support of transport helicopters. The Firefly technique of the 334th Armed Helicopter Company appeared on a CBS nation-wide telecast.

c. This headquarters continued to prepare and disseminate a weekly bulletin to all units of the 12th Combat Aviation Group. Two subordinate units, the 11th Combat Aviation Battalion and the 222d Combat Aviation Battalion, continued to publish unit newspapers.

7. EDUCATION:

Within the headquarters, 17 individuals are enrolled in correspondence courses, at the close of this quarter. During the quarter, six High School GED tests have been administered, and one person has received a high school diploma based on scores received. Three battalions are presently submitting applications for courses direct to Madison, Wisconsin, and are administering tests at battalion level. Over-all, the education program has been highly successful during the past quarter.

3. CIVIC ACTION:

During the past quarter, all units of the 12th Group have actively engaged in Civic Action projects. Continuous emphasis was placed on "self-help" endeavors with more active participation sought from Vietnamese. This approach has resulted in an improvement in existing projects. The 222d Aviation Battalion has instituted plans for the construction of a new hamlet and will seek maximum Vietnamese participation in this project. In accordance with USARV instructions, employment of local nationals has decreased ten percent since the last reporting period.

9. R & R

The most popular R & R locations during the quarter were Hawaii, Bangkok and Hong Kong. Increased quotas to these locations could be filled with little difficulty. R & R problem areas are discussed in Section II.

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10. SPECIAL SERVICES:

Special Services equipment and supplies have continued to be available. A & R Kits containing a good selection of sports equipment were received in January and distributed to subordinate units. No particular difficulties have been encountered in the area of Special Services.

11. REENLISTMENTS:

During the reporting period 50% of eligible personnel reenlisted.

12. EXTENSIONS OF FOREIGN SERVICE TOURS:

During the reporting period 224 Enlisted men and one Officer extended their foreign service tours. This compares with 211 Enlisted men and seven Officers during the previous quarter.

F. (C) Intelligence:

1. Visual Reconnaissance: The Visual Reconnaissance and reporting program has continued with satisfactory results. As of this date, a total of 269 sightings have been reported of which 198 pertained specifically to possible VC tax points. A lack of sufficient O-1 observation aircraft to perform adequately the multitude of surveillance missions has hampered the tax collection point effort.

2. Escape and Evasion: An "Escape and Evasion" program was initiated for the 12th Combat Aviation Group during the month of December 1966. A conference was held at the Group Headquarters on 25 January 1967, with representatives from all subordinate battalions, the 1st Aviation Brigade and the Joint Personnel Recovery Center, Headquarters, USMACV, in attendance.

3. Security:

a. The S-2 Section continued in its capacity as the focal point of command guidance throughout the group in matters pertaining to personnel security and safeguarding of classified material.

b. The classified files and distribution facility operated by the S-2 Section processed approximately 10,711 incoming and 6,829 outgoing pieces of classified material during the 90 day period covered

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by this report. Also during this period, all classified documents were reviewed for regrading and/or destruction, with 452 Secret and 1,096 Confidential documents having been destroyed.

c. The Group experienced no security violations during the period requiring investigation under the provisions of paragraph 72, AR 380-5. This headquarters received no administrative violations during this period.

4. Aerial Photographic Reconnaissance and Electronic Surveillance:

With all photo and electronic surveillance aircraft, OV-1, remaining under operation control of MACV J-2, the group has no photo and electronic surveillance capability truly responsive to the tactical commanders. In an effort to have some photographic capability it was determined that a small format, hand held, polaroid type camera could provide an interim capability to satisfy requirements for photo coverage of highly perishable intelligence targets. Accordingly, approval for requisitioning a like item was obtained in May 1966. Based on this approval, 26 cameras were requisitioned. To date, three cameras have been received. A continuing requirement exists at the corps level for OV-1 aircraft to be responsive to the tactical situation. A study was conducted to emphasize this need and at present is in the process of being updated and revised.

5. Staff Visits:

a. The S-2 and Assistant S-2 made staff visits to each subordinate battalion headquarters during the period, providing intelligence and security guidance as appropriate and maintaining continuity and uniformity of effort.

b. Regularly scheduled liaison visits are made weekly to USARV Headquarters by a representative of the S-2 Section with visits to the 1st Aviation Brigade included when practicable. Daily contact is maintained with representatives of the ACofS, G-2 II FFORCEV.

6. Review of Report Requirements: A continuous analysis of existing requirements with a view toward reducing the volume and increasing the value was conducted during the period.

7. Cartographic Material: With the exception of a few unprinted or out-of-stock sheets, full coverage of the Group area of influence and areas of interest is being maintained in sufficient quantity to satisfy operational requirements.

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G. (C) Operations:

1. FIELD OPERATIONS: As the number of Army aviation units assigned to 12th Combat Aviation Group increased during the period, the Group became more oriented to the tactical mission as well as continuing to provide administrative support. Multi-battalion aviation support rendered to multi-division operations have required a greater exercise of tactical command and control by the Group Commander. Functioning additionally as the Aviation Officer of II FFORCEV has also required him to become more involved in tactical planning as the CG, II FFORCEV exercised command and control of multi-division operations. Operation ATTLEBORO found the Group tactically involved and operating from a forward command post. Operating techniques have been refined and it is anticipated that the Group will habitually operate from forward field locations as multi-division operations become more frequent.

2. AIR MOVEMENT DATA: Because of the limited amount of aviation assets available in III CTZ during the reporting period, it was necessary to monitor requests for aviation support very closely. Major ground combat units often asked for large numbers of assault helicopter companies and CH-47's to support their operations. No ready reference existed to enable the Army Aviation Element to determine whether requests for support were excessive or were approximately correct. Since many operations were conducted on very short notice, detailed planning for support gave way to guess work and the experience of the aviation planner. The Group developed an "Air Movement Data" card (Annex C) to assist commanders and staff in rapid planning and in making estimates based on actual experience gathered during Operation ATTLEBORO. The infantry lift data on the card assumes the UH-1D Helicopter to carry 7 troops each. Refueling time is contained in the total times per lift. The artillery data represents a lift capability of 8,000 pounds per sortie using the CH-47A Helicopter. Refueling time and various loading times are contained in the data. All loads other than gun crews and vehicles are externally carried. The Air Movement Data charts are a valuable aid in hasty estimation of aviation support requirements but should not be used as a substitute for detailed planning.

3. Employment of XM-27 (GR VEL) Mine: On 26 December 1966, the 12th Combat Aviation Group flew the first operational mission in South Vietnam, employing the XM-27 (GR VEL) Mine. The GR VEL Mine is an aerial delivered mass scatterable, self sterilizing, self arming, non metallic, blast type, anti-personnel mine. The mines are shipped and stored in a loaded XM-2 dispensing canister. A canister contains 300 mines and four canisters (1200 mines) make up the XM-47 subsystem. Two XM-47 subsystems are carried by UH-1B Helicopter which has a current capability of laying minefields with effective pattern lengths of 151 meters to 950 meters,

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dependent on the desired minefield density, and effective width of 30 to 40 meters. During the period 26 December 1966 through 31 January 1967 a total of 34,500 mines have been dispersed in support of combat operations in the III CTZ. 12th Combat Aviation Group published comprehensive checklists, so that despite continued malfunctions of the XM-2 canisters, the Group has been able to continue the safe delivery of more than 85% of the mines. The tactical commanders in the III CTZ have been enthusiastic in their acceptance and employment of the GR VEL Mine and it is anticipated that requests for the employment of the Mine will increase during the forth-coming year.

5. FIREFLY: The Firefly activities have been experiencing continued successes. During December and January, the Firefly teams were credited with 689 VC sampans and 31 VC structures destroyed, and 71 VC KIA. The assault helicopter companies of the 11th and 145th Battalions have been equipped with light sets in a move to expand Firefly capabilities. The lack of heavy weapons remains a problem, but the 116th Assault Helicopter Company has a 20mm gun mounted on a UH-1D helicopter that shows promise. The 334th Armed Helicopter Company has been given the mission of training the Firefly teams of the individual companies. Thus far the 145th Combat Aviation Battalion has completed the training, but only the 116th in the 11th Battalion has finished. The 120th Assault Helicopter Company has expressed the desire to have a Firefly team trained and assume responsibility for CMD, and is being given priority for that training. The lack of a .50 cal is also a problem in the 120th. As of 31 January 1967, II FFORCEV has authorized the use of up to four Firefly teams nightly with the proviso that fire team requirements for the subsequent day can either be met or reduced by agreement with supported elements.

6. STATIONING: The anticipated stationing of another assault helicopter company in III CTZ, in addition to units already programmed, has initiated the reshuffling of the current stationing plan. The Buffalo Combat Aviation Battalion (Prov) was formed from in-country assets, and is located at Bear Cat effective 15 January 1967. The main body of thw 269th Battalion Headquarters and Headquarters Detachment reached RVN and disembarked at VUNG TAU on 28 January 1967. The 147th Assault Support Helicopter provided lift for the troops from VUNG TAU to their new station at CU CHI.

7. Airfield Survey:

a. Lack of data on airfields in use, and abandoned airfields, prompted a survey of all airfields within the III CTZ. This information is often needed when programming the stationing of incoming units and is of great importance in planning airmbile operations.

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b. The survey was accomplished using a helicopter and a photographer. Photographs were taken parallel to the runway and one from the end of the runway showing the long axis. At secure airfields a ground survey was conducted in addition to the aerial survey.

c. A data sheet reflecting length, width, surface, obstacles, runway headings and friendly situation accompanies each series of photographs.

d. The data was assembled in bookform with distribution to each battalion within the Group.

e. A master copy will be retained at Group Headquarters and semi-annually, or earlier if required, a resurvey will be conducted to update the data.

H. (U) TRAINING:

VNAF Pilots: Seven VNAF aviators were attached for UH-1 transition and tactical training on 8 November 1966. The VNAF aviators were assigned to companies within the Group and were given training as required by TC 1-10 (UH-1 Transition Training). All of the VNAF aviators completed the UH-1 transition training in a satisfactory manner and then were assigned on normal operational missions and received concurrent tactical training during the remainder of this reporting period. The VNAF pilots have proven to be cooperative and eager to learn. The language barrier continues to be a handicap, particularly during the transition phase.

The lack of pilot checklists written in Vietnamese was a hinderance, therefore, this headquarters requested translation of the UH-1 checklist which was reproduced and distributed to the VNAF training. The 1st Avn Bde intends to have the checklists reproduced in pocket-size folders and issued to all VNAF pilots reporting for UH-1 Transition. The 1st Avn Bde recently provided a test written in Vietnamese and conforming to the requirements of TC 1-10 which will also be of assistance in future UH-1 transition training.

I. (C) LOGISTICS:

1. Summary of S-4 Activities:

a. During the reporting period, S-4 effort has been directed toward equipping the Buffalo Combat Aviation Battalion (PROV), finalizing the transfer of logistical assets from CV-2 units to the Air Force, continued follow up on construction projects, motor and aircraft maintenance, and food service improvement.

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b. The activation of the Buffalo Battalion required equipping the unit from 12th Combat Aviation Group assets. To this end, subordinate elements were levied for minimum essential equipment to get this new unit operational at the earliest practical date. This involved both TOE & station property type items. Transfer of TOE equipment has created a somewhat adverse impact on levied units particularly in those areas involving critical items, i.e., radios, typewriters, generators, and vehicles. Staff assistance continues to be provided as this unit prepares for its operational mission; however, equipment shortages are certain to be a problem area until authority to submit unit requisitions is granted.

c. The end of December marked the closeout and turnover to the US Air Force of the three CV-2 Caribou units assigned. Transfer of all property to the US Air Force and/or turn-in of equipment to appropriate Army supply agencies was effected in an orderly, progressive fashion, creating minimum impact on all concerned. Inspection of unit property books indicated all at zero balance as of 30 December 1966, with accountability administered in full accordance with existing regulations.

d. A marked increase in vertical construction in Headquarters and Headquarters Company area has taken place during the reporting period. A total of nine additional troop hutments have been erected, a 20 X 60 hutment for use as an orderly room has been completed and a combined enlisted - NCO recreational facility consisting of one 20 X 100 hutment is finished. The Group aircraft maintenance area reflects completion of the administrative/supply building which has facilitated the move of aircraft and maintenance section from BIEN HOA to LONG BINH. Currently in progress is the enlargement of the unit mess to provide for the influx of additional personnel when the Headquarters Staff Officers move onto the Long Binh Complex.

e. Modernization of O-1 and UH-1 Companies continues this quarter. O-1 aircraft of the 74th Aviation Company are being exchanged in groups of four. A problem arose due to the breakdown of the issue systems. The intent of the program was to effect a direct exchange of modernized aircraft for old aircraft. The actual result is a one to four week delay in receiving replacement aircraft after the operational aircraft are turned in. This loss places an undue load on already heavily taxed O-1 assets. No exchange of aircraft should be directed until a one for one trade is feasible. The gun platoon of the 68th Assault Helicopter Company began conversion to UH-1C Helicopters. Five aircraft were received in January with the balance due in February.

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f. Aircraft Recovery Team Training was conducted during the month of December. A team from the 56th Transportation Company (DS) conducted the training in rigging a UH-1B and UH-1D helicopter. This was accomplished with standard and lightweight equipment. Unit recovery equipment was inspected. Each assault helicopter company in the 12th Combat Aviation Group now has qualified personnel and necessary equipment to rig damaged aircraft for evacuation by CH-47.

g. Although the XM-47 mine dispersing subsystem is available in-country, a problem of loading and rearming ships equipped to carry the munition has developed. Since ground handling equipment, i.e., forklifts and bomblifts, is required at the loading site, the choice of loading areas has been limited. Since 1st Logistical Command has continued to insist that loading cannot be permitted at the LONG BINH 3rd Ordinance ASP, the consequent delays due to transportation difficulties has limited the response time in preparation for missions with the XM-47. Requests and a recommended most feasible course of action for loading the XM-47 munition as well as reloading the empty XM-47 pods have been made to USARV.

h. The problem of drainage, dust and uninstalled garrison type equipment in the 12th Combat Aviation Group messes has improved. Large ditching projects just completed have practically eliminated the stagnant water around many messes. Most of the dust-producing roads near messes have been resurfaced or oiled. At this time 90 percent of the garrison equipment has been installed and is in use. This improved logistical support was gained through numerous meetings and conferences.

2. SUPPLY:

a. Ammunition: Ammunition expenditure has continued to be below established ASR's due to judicious target selection and command emphasis. The importance of accurate timely malfunction reporting has been re-emphasized. Suspension announcements have been prepared by Group S-4 for distribution A in order to relieve the battalions of the burden of reproduction of these notices. The World Wide Ammunition Report has been improved by the addition of a new section covering weapon's density. Units have been required to show a breakdown of weapon authorizations as well as to show the total count of tubes by weapons systems. This will result in increased reporting accuracy. Action has been taken by USARV AMMO OFFICE to procure 7.62mm linked ammunition in 1500 round belts for use in the XM-21 subsystem.

b. POL Pumping Equipment: During January, receipt of 100 GPM and 30/40 GPM POL pumps has augmented the capability of units of the Group to allow a better refueling situation for operational requirements. In-

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formation has been received that a fill to authorized level of POL handling equipment may be avialable in the near future and also enable units to replace some worn out pumps. Unfortunately the necessary filter/ separations did not arrive with the pumps but a bulk requisition has been prepared by 1st Logistical Command for these items.

c. Body Armor: Some of the new items of body armor have been received. At present the on hand/authorized percentage stands at approximatly 50% for front with carrier and at 40% for front and back with carrier.

d. Prestock Points: During the quarter, G-4 participated in conferences and negotiations in order to arrive at a solution for the prestock point problem. To date little progress has been made though II FFORCEV has prepared a directive assigning the maintenance of operation of selected prestock pointsto the contiguous U.S. units. A plan has been laid which would allow the evolution of prestock points to Army Aviation Logistical areas as American units are stationed in the vicinity of the remaining prestock points. Three prestock points, DUC HOA, TAN AN, and HAM TAN will continue to be operated by III RVN Corps advisors using 12th Combat Aviation Group pumping equipment and ammunition credits. The 12th Combat Aviation Group is expected to be tasked to operate and maintain the prestock point at SONG BE at some future time.

e. Armament systems and supplies were standardized. This headquarters secured written authority for numbers and typesaf armament systems. This authority was the basis for est blishing authorized amounts on hand, turn-in of excess and establishment of PLL's and ASL's.

f. Some XM-21 armament systems were issued to the Group during the quarter. A total of 24 systems were installed. The 173d Assault Helicopter Company received the next 18 systems.

g. There has been a shortage of M5 40mm grenade launchers. These systems were not available in the theater. This situation has remained dormant for 60 days with no expected arrival of replacement systems.

h. There was a significant improvement in armament support facilities in the direct support companies. Spare parts for gun systems were available in greater quantities and repair facilities provided better response than the last quarter. Improvement is still necessary.

i. There was a marked improvement in procedures for turn-in of extensively damaged or destroyed aircraft. Procedures were implemented at the request of this headquarters to expedite turn-in procedures.

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j. During the quarter, the Group requested fabrication of 15 Helicopter Illumination Sets (Firefly) with spare parts. Ten of the 15 requested were built by the 1st Transportation Battalion (Seaborne) and delivered. Instructions for preparation of PLL's were disseminated. At the close of the quarter, 11 lights were operational in the 11th and 145th Combat Aviation Battalions. Eight (8) AN/M2 50 caliber machine guns to complement the Helicopter Illumination Sets have been requested under the provisions of Project Ensure. Action is pending.

3. Aircraft Maintenance:

a. During the months of October and November, aircraft hours flown reached the highest utilization to date. This was especially true of UH-1D aircraft. These aircraft flew an average of 96 hours per assigned airframe per month. Immediately after Operation ATTLEBORO, the EDP rate began to rise. The parts consumed because of high utilization, combat, and crash damage have caused the EDP rate for UH-1 aircraft to remain well above that which was projected.

b. CH-47 aircraft presented a problem during Operation ATTLEBORO. At the low point, availability was 32% mission ready. This was due to a maximum commitment of aircraft and the age of the aircraft in the 147th Assault Support Helicopter Company. Seven of the 16 assigned aircraft are 1962 models. These aircraft require a high rate of EDP to support. In contrast they produce approximately 30% of the hours flown by 1966 models. These aircraft should be replaced at the earliest possible date.

c. Engine parts for the T-53 engine are a problem area. These items are not available in theater in adequate quantities. This shortage has a significant effect on mission ready status. If the supply estimate is accurate, this may be come a serious problem affecting operational status of all UH-1 units.

d. Two items of ground support equipment are needed by aviation units of this command for field and garrison operations. These items are a lightweight maintenance shelter (Cow Shelter) and portable flood light sets. 1st Aviation Brigade has been requested to assist in obtaining these items. Action is pending.

e. An emergency engine oil cooling system has been designed for use when the standard cooling system of a UH-1D helicopter is disabled due to enemy fire or mechanical failure. By installing this emergency system a UH-1D helicopter can be flown out of a combat environment into a safe maintenance area for repair. See Annex L for a picture of the system.

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The emergency engine oil cooling system incorporates a standard oil cooler mounted on an aluminum frame. The frame is mounted to the outside of the UH-1D helicopter and flexible oil lines incorporating quick-disconnect fittings join the emergency cooler to the engine oil lines. Ram air through the cooler provides the necessary degree of cooling.

Care must be exercised when using the emergency engine cooling system in that ram air cooling is obtained only in forward flight. Minimum ground-runs and hovering is necessary to keep the engine oil temperature within allowable limits.

J. (C) SIGNAL:

1. Command Post Communications: During the reporting period much was accomplished to improve communications within this headquarters. The new family of ground radios (VRC-12 series) were issued throughout the 12th Combat Aviation Group. With the new FM radios, range and reliability was improved. Vehicular-mounted radios are now available to the commanders for ground mobile communications. The single-side band radio set continues to function well. Additional provisions for the new Buffalo Aviation Battalion are being made by ground-mounting an aircraft, AN/ARC-102, radio. This is required due to the lack of the desirable AN/MRC-95. Secure teletype service was improved by the rerouting of the VHF-carrier circuits to provide the shortest and most trouble free routing. Reliability was greatly improved. Additional circuits have been requested for circuits to the two new aviation battalions now being established at BIEN HOA and CU CHI. An additional feature, the adapting of a crypto MMD, allows the teletype net to rapidly change keylists. This reduces the down-time of the net approximately thirty minutes each day when the keylist is changed. The installation of a ninety-foot antenna at the FM radio base station greatly extended the range of the Command, A-2, and UHF Nets of this headquarters. A similar antenna will be placed at the subordinate battalions in the near future.

2. Navigational Aids: Navigation during periods of reduced visibility was aided by installation of a non-directional beacon (AN/GRN-6) at TAY NINH (W) Airfield. This was installed by the 125th Air Traffic Control at the request of the 12th Combat Aviation Group. The Pathfinders continued to utilize the HRT-2 portable beacon during this period. However, the AN/TRN-25 beacons are now being received and distributed. It is expected that this beacon, with a fifty mile range, will be very helpful in providing navigation aids to the forward airstrips and landing zones. One additional non-directional beacon, AN/GRN-6, has been acquired to provide more permanent facilities during future operations at forward airfields.

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3. Forward Command Post: Sufficient communications equipment was acquired during the period to provide a duplicate of all existing facilities at a forward command post. The forward facilities were initially established at TAY NINH (W) during Operation ATTLEBORO, but have been considerably improved with the receipt of a communications Central, AN/TSC-59, mounted on a 3/4 ton truck.

4. NOTAM Service: The 12th Combat Aviation Group Signal Officer serves as the II FFORCEV NOTAM Officer. This service was expanded to twenty-eight (28) major headquarters with the III CTZ. The information is collected from all tactical and aviation units to the Signal Section where it is disseminated by teletype to all aviation agencies operating in the III CTZ. It is included in the monthly 125 ATC consolidation. This service is the only means by which the units in III CTZ receive timely information pertaining to local hazards to aircraft, navigation, or air traffic control.

5. Staff Visits: During the quarter the Signal Officer and the Avionics Officer made numerous visits to the subordinate and supporting Signal elements. The purpose of the visits were to provide technical and command assistance to the communications personnel and the avionics detachments. As a result of these visits a better mutual understanding of mission and support requirements exists between the staff officers and the detachments. Many solutions, modifications, and procedures of technical functions were noted and passed on to the other "communicators" by the visiting staff officer. This resulted in the standardization and simplification of many problem areas.

6. Projects: Several projects were initiated and are being supervised by the Signal Section.

a. Standardized SOI: A meeting was called by the 12th Group Signal Officer to discuss with the Battalion Signal Officers the feasibility of producing one standard version of the SOI for all aviators within the 12th Group. The suggestion was enthusiastically accepted by all units. The contents were discussed in detail, using the experience of many aviators to determine the required contents. It was concluded that the Group Signal Officer would produce approximately 600 copies of the twenty-six page, pocket-size SOI's and forward to the units. The first shipment was prepared and disseminated on 27 January 1967, and was very well received.

b. Avionics Retrofit Program: The avionics retrofit program started in mid-October and is still in progress. Eighteen (18) UH-1 aircraft of the 12th Combat Aviation Group have been modified to accomodate

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the secure voice (KY-28) equipment. As of 26 January 1967, eighteen (18) of the fourty-seven (47) O-1 aircraft in the 74th and 184th Aviation Companies have been fitted with the new ARC-54 (FM) radios. The O-1's are being fitted with dual ARC-54 which gives them the capability for automatic retransmission. This automatic retransmission has been tested and proven to work very well. As the retrofit program progresses a gradual relief from the FM frequency limitation and congestion will be realized.

e. Avionics Test Equipment: Due to the shortage of avionics test equipment within the avionics signal detachments and inventory of all avionics test equipment within the 12th Combat Aviation Group was performed. Upon completion of this inventory a lateral transfer of items was initiated to place the test equipment where it was most needed. This helped solve some of the problems now caused by the lack of avionics test equipment. Several items of test equipment, such as required for the new VOR and ADF receivers, still are not available for use by the avionics teams.

7. Avionic Problems Encountered:

a. Due to the shortage of avionics test equipment within the signal detachments of this headquarters it has become necessary for them to evacuate items to their general support that are within the detachments repair capability. This causes a greater repair time for the item and tends to overload the general support maintenance facility. This problem will be reduced with the transfer of test equipment between detachments but will only be solved when all the test equipment is obtained by the detachments.

b. Due to the limited amount of in-country calibration equipment for avionics test equipment it is necessary to return some avionics test equipment to the states for repair. The return time for these items to the signal detachments has in some instances been in excess of ten (10) months. This period is too long for the repair facility to be without a piece of vital test equipment. The specific items with work order numbers and dates were forwarded through command channels for action that will expedite the repair and return.

c. Another problem encountered is the introduction of new radio equipment (ARN-82 and ARN-83) into the system without test equipment and/or back up float items to support them.

d. The 73d Aviation Company (OV-1) does not have a back-up general support maintenance facility in RVN for avionics items peculiar

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to Mohawk aircraft, such as the AN/APS-94, AN/ASD-14, ART-41, AN/ART-64, and AN/ASW-12. The unit must attempt to provide all levels of maintenance on this equipment. Due to the limited number of Technical Manual publications on such equipment as the AN/APS-94, AN/ASD-14, AN/ART-41, AN/ASN-64, AN/ASW-12, AN/ASN-35, MA-1, DS-61, and KL-60, the unit has had to requisition parts using part numbers from the manufacturer's parts manual. This causes many requisitions to be delayed, cancelled, or filled with the improper repair part. In a few instances the unit has had to write direct to the manufacturer for needed information with which to obtain the item.

K. SAFETY:

1. Summary of Activities: During the reporting period the 12th Combat Aviation Group Aviation Safety Section recorded, reviewed and analyzed:

31 - Aircraft Accidents
29 - Incidents
20 - Forced Landings
17 - Precautionary Landings
259 - Combat Damages
1 - Other type accident

There was a 253% increase in reported mishaps over the previous period. The tremendous increase is attributed to improved reporting procedures and increased command emphasis on accurate and timely reporting. Combat damages accounted for the majority of the increases.

2. SIGNIFICANT EVENTS:

a. In January, 1967, a UH-1D accident resulted in 8 fatalities. Preliminary investigation involving USABAAR and Bell Technical Representatives determined the probable cause of the accident was a result of the synchonized elevator failing. A thorough examination of the wreckage found a bell crank installed backward and a push pull rod which had sheared from that bell crank going to the elevator. This allowed the aircraft nose to dip violently. The main rotor was probably placed immediately back into a level attitude in an attempt to pull the nose of the aircraft up. The result was to clip off the tail boom with the main rotor blades. The parts in question have been sent for analysis. A message was transmitted to all aviation units in the 12th Combat Aviation Group requiring a one time inspection of all UH-1D aircraft.

b. On 15 January 1967, a CH-47 helicopter was on a support mission near C.N THO when it crashed resulting in 7 fatalities.

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A preliminary investigation found that the factory apparently installed the number 2 (LFT Synchronizing) shaft backwards. This shaft is often referred to as the number 9 shaft. Indications at this time are that the adapter to which it is attached may have failed. The 34th General Support Group put out a message for a one time inspection of the above mentioned items.

L. (U) Medical.

Summary of Medical Activity:

a. Much progress has been made in this area. Two new Consolidated Aviation Dispensaries were opened during this quarter. The 145th Combat Aviation Dispensary at BIEN HOA opened on 8 November 1966 and is now equiped to handle all routine laboratory procedures and can do Class III Flight Physicals except for X-Rays. The 11th Combat Aviation Dispensary at PHU LOI opened on 17 January 1967 and is now about 50% operational. A lack of coordination with RMK-BRJ resulted in the building not being completely finished inside. Due to the necessity of completely staffing and equipping the Buffalo Battalion, there wasn't enough equipment (station property type) to allow the 11th Combat Aviation Dispensary to offer the same spectrum of services as the 145th Dispensary.

b. Because of the large number of flying hours by aviators within the 12th Combat Aviation Group, the Group Surgeon initiated a comprehensive study of pilot fatigue. Due to the rate of turn-over of flight surgeons who were supplying input data to this study, the desired evaluation is running behind schedule. A completion date of 1 May 1967 is now considered to be the earliest time in which meaningful results may be obtained.

c. Test of Body Armor. A test was made of ricocheting secondary metallic fragments with a view of determining a preventive measure.

The conduct of the test with supporting pictures is attached as Annex D.

d. During this reporting period units in this command have received the XM-21 weapons system. Due to the high noise level a study will be initiated as soon as a sufficient number have been installed to provide input data. Initial reports show no harmful effects on crews; however, a long range study is anticipated to obtain the most factful information.

e. Increased emphasis has been given to the first aid program. A first aid instruction program has been started at each company within Group. The four lifesaving steps are being stressed with greatest emphasis on control of bleeding and shock. Since this training program begun several wounded crewmen have benefited from training derived.

SECTION II - OBSERVATIONS AND RECCOMMENDATIONS
PART I OBSERVATIONS

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A. (U) PERSONNEL:

1. ITEM: R & R DEPARTURE POINTS
DISCUSSION: R & R quotas for departure from Cam Ranh Bay are difficult to fill because of the distance involved in transporting personnel to the departure point.

OBSERVATION: R & R allocations for various departure points should be distributed based on the geographical location of the unit to minimize in-country transportation requirements.

2. ITEM: RECEIPT OF R & R ALLOCATIONS:
DISCUSSION: Delay in receipt of allocations for January caused significant problems in filling early January quotas. Late receipt of allocations makes it difficult for the individual to complete his personal arrangements for travel.
OBSERVATION: R & R allocations should be distributed not later than the 20th of the preceding month, and, if possible, even sooner, to allow maximum participation in the program.

3. ITEM: DIRECTION AND COORDINATION OF MEDCAP
DISCUSSION: There is insufficient guidance on MEDCAP procedures and reporting channels.
OBSERVATION: A USARV or MACV directive should be published to provide necessary instructions.

4. ITEM: OBTAINING COMMODITIES FOR THE CIVIC ACTION PROGRAM
DISCUSSION: Obtaining commodities for the CAP is complicated by the multiplicity of agencies involved.
OBSERVATION: A central agency should be established for distribution of commodities for the Civic Action Program.

B. (C) OPERATIONS

1. ITEM: XM-47 Malfunctions
DISCUSSION: a. Continued malfunctions of the XM-2 canister fracture valve (Fig 1-1 (C) TM 9-1345-201-15/2), which preclude the ejection of the mines from the opened canister, constitute an unsafe flight condition during mine laying missions. The unsafe flight condition is the result of a 10 to 11 minute delay between time of malfunction and the time the warning light on the pilots XM-47 control panel lights. The delay in malfunction warning results in the opened canisters, full of slowly arming mines, being carried from the target area and then having to be jettisoned over hastily selected jettison areas.

b. Modification of the ammunition is not possible since the XM-2 canister is a sealed unit and there is no way to correct existing internal deficiencies. An alternate solution to the problem was sought.

The forward end of each XM-2 canister is equipped with a visual pressure gage which is easily monitored by the crew chief and the gunner during flight if the nose fairing is removed. The needle on the pressure gage of a normally functioning XM-2 canister will rotate out of the operational zone (GREEN) after the canister is fired because of the immediate loss of pressure as the mines are expelled by a piston activated by nitrogen under pressure. Fracture valve failure, or failure of the canister to function, can be immediately detected by the crew members at the conclusion of the firing pass, by visually checking the XM-2 canister pressure gages. If any of the gages read in the operational zone (GREEN) the canister has malfunctioned and should be jettisoned immediately. This procedure negates malfunction jettison problems since the jettison can be accomplished in the target area and it also precludes the aircraft from being flown away from the target area with arming mines still in the XM-2 canisters. These procedures have been employed on the past three (3) XM-47 missions and have proven successful. Pilot checklists which incorporate this procedure have been written and are currently being employed on XM-47 missions. (Annex E)

c. In order to help preclude the possibility of an incomplete electronic check of the XM-47 subsystem when preparing the ammunition for delivery, detailed checklists which cover the test set XM-68, loading of the XM-3 canister, and XM-47 subsystem checkout are being used by the aircraft armorers. (Annex F, G, H)

d. A mission commanders checklists and a guidance table to be used when planning XM-47 missions were written and are being used in order to assist XM-47 mission commanders. (Annex I & J)

OBSERVATIONS: The checklists and procedures which are being employed by the 12th Combat Aviation Group have enabled the safe continuance of mine laying missions, dispite faulty ammunition they have increased the importance of Army aviation in Vietnam by adding still another facet to it's inspiring role.

C. (C) TRAINING AND ORGANIZATION

2. ITEM: Flight section located excessive distance from Group Headquarters.

DISCUSSION: Excessive amount of man hours were lost in transit to and from the flight section while located at BIEN HOA airfield. Optimum supervision was not practiced due to the distance involved and ground transportation not being readily available.

3. ITEM: Inadequate Data on Airfields Within III CTZ

DISCUSSION: Little, or no data was available at Group Headquarters on airfields located in the III CTZ. This information is needed for deployment planning and airbobile operations.

OBSERVATION: Data on airfield should be compiled at the aviation headquarters that is responsible for the area. Once the data is obtained it should be kept current by feeder reports from units in the field and by periodic on site surveys by the compiling headquarters.

4. ITEM: Airlifting the 155mm Howitzer by CH-47A Helicopter
DISCUSSION: Prior to the introduction of the CH-47A "Chinook" helicopter in the Republic of Vietnam, it was rarely possible to provide artillery support to our infantrymen during airmobile operations. The only supporting tube weapons that could be carried by the helicopters were mortars and recoilless rifles. As CH-47's became available in theater, moving light (105mm) artillery became a standard practice.

The requirement existed for medium (155mm) artillery to be available to the ground commander to provide added fire power at a range greater than that of the 105mm howitzer. Until December 1966, it was considered that the 155mm howitzer could not accompany the airmobile assaults. A recent breakthrough in helicopter operations has changed this. Units of the 12th Combat Aviation Group have proved it is feasible to airlift the towed 155mm howitzer by CH-47A Helicopter.

The results of the analysis and tests appear in the mission profile attached as Annex K.

OBSERVATION: The capability of the CH-47A to airlift a 155mm howitzer gives the ground commander an additional means to influence the battle.

D. (C) Intelligence

1. ITEM: Visual Aerial Reconnaissance
DISCUSSION: Sightings of enemy activities such as VC troop concentrations, road blocks, fortifications and tax collection efforts were reported by group aircraft using the "Buffalo Spot" radio net. This was accomplished with moderate success since the majority of aircraft Commanders conduct this project as a by-product of their primary mission. Overall communication difficulties encountered were essentially the same as previously reported with the exception that signal reception was greatly improved due to the installation of a new antenna.

(C) OBSERVATION: "Buffalo Spot" is considered to have a real potential in collecting and disseminating visual aerial reconnaissance reports, and greater usage of this facility could improve the capability of exploiting the excellent potential for intelligence collection inherent to all aviation organizations.

2. ITEM: Direct Unit Distribution of Routine Classified Material.
DISCUSSION: The classified repository and message center operated by the S-2 Section processed approximately 10,711 incoming and 6829 outgoing pieces of classified material. This function placed a heavy administrative burden upon this section, since a good part of the material is intended for distribution to subordinate units.

(U) OBSERVATION: The establishment of a direct unit distribution system would eliminate many administrative functions required in the handling of voluminous quantities of classified material and would improve the value and timeliness of the intelligence available. Further, the establishment of such a system would provide better utilization of S-2 personnel and improve the overall efficiency of the section.

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E. (U) LOGISTICS

1. Activation of Buffalo Combat Aviation Battalion

a. ITEM: Equipment.

b. DISCUSSION: Buffalo Battalion (PROV) was activated on 15 January 1967, by direction of Headquarters USARV, without authority to requisition equipment or personnel. Although other units within the command were levied for selected items, the unit remains critically short of needed equipment.

c. OBSERVATION: Proper preplanning of such actions would permit issue of equipment from normal supply channels at or before activation of provisional type units.

2. Smoke Signaling:

a. ITEM: Smoke grenade flotation.

b. DISCUSSION: There is a vital need for devices which will enable standard smoke grenades to float. Currently, plans are to test an experimental item, the grenade flotation attachment, for use in 2.75" rocket tubes. Another item, the adapter kit for the LAU 3/A 19 tube rocket pod, would enable multiple launching of floating grenades. Tests with the E14, E28 aerial smoke marker system showed that the combination was unsuitable for use by aircraft of this command due to the weight, unreliability, and lack of colored smoke.

c. OBSERVATION: The availability of grenade flotation devices would provide a means for an efficient smoke laying capability.

F. (U) Flight Safety

1. Fixed wing airfield survey

a. ITEM: An airfield survey is being conducted, to determine possible safety hazards.

b. DISCUSSION: At present approximately 90% of the airfields within III CTZ have been surveyed. The problem areas most common are:

(1) No airfield markings.

(2) Improper or no surface drainage.

(3) Minimal maintenance.

(4) No established traffic patterns to separate fixed wing and rotary wing traffic.

Photos of all airfields utilized by Army F/W aircraft are at present being processed for distribution to all aviation battalions within 12th Group: which have organic F/W aircraft assigned.

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33 c. Observation: Commanders and users are urged to report existing hazards to 12th Combat Aviation Group, Flight Safety Officer. Also when repairs are performed of a significant degree, information of same should be provided to the 12th Combat Aviation Group.

2. Aircraft Mishap Reporting

a. Item: Reporting of aircraft mishaps has improved throughout the period; however, further improvements must be accomplished.

b. Discussion: Reporting of mishaps of a major nature appears to be adequate. Items that appear insignificant at company level are not being reported 100% of the time. Events that seem unimportant at company level could prove very beneficial at higher echelons in determining trends in operational and maintenance practices or material failures.

c. Observation: Company, Battalion, and Group Safety Officers should continue stressing the importance of analyzing all mishaps and reporting all cause factors most expeditiously.

PART II RECOMMENDATIONS

A. (U) PERSONNEL:

1. R & R allocations for units in the general area of Saigon should be for departure from Tan Son Nhut only, rather than including allocations for departure from Cam Ranh Bay.

2. Necessary instructions on MEDCAP procedures and reporting channels should be provided by publication of a USARV directive.

3. A central agency should be established for distribution of commodities for the Civic Actions Program.

B. (U) OPERATIONS: The employment of the XM-47 can be safely conducted by use of proper checklists and procedures.

C. (U) TRAINING AND ORGANIZATION: None

D. (U) INTELLIGENCE: None

E. (U) LOGISTICS: None

F. (U) SAFETY: None

G. (U) MEDICAL: None

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Raymond P. Campbell

RAYMOND P CAMPBELL, JR.
Colonel Armor
Commanding

ANNEX A: Organization
B: Unit Locations
C: Movement Data
D: Body Armor Study
E: XM-47 Pilot Checklist
F: XM-68 Test Set Checklist
G: Data Sheet for XM-3 Subsystem
H: XM-47 Interim Checklist
I: XM-47 Mission Commander Checklist
J: XM-47 Planning Tables
K: CH-47 Data for Airlifting 155 How.
L: Emerg: Oil Cooling for UH-1D
M: Statistics

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CG, 1st Avn Bde
CG, USAAVNC
CO, 11th Cbt Avn Bn
CO, 145th Cbt Avn Bn
CO, 222nd Cbt Spt Avn Bn
CO, 269th Cbt Avn Bn
CO, Buffalo Cb Avn Bn

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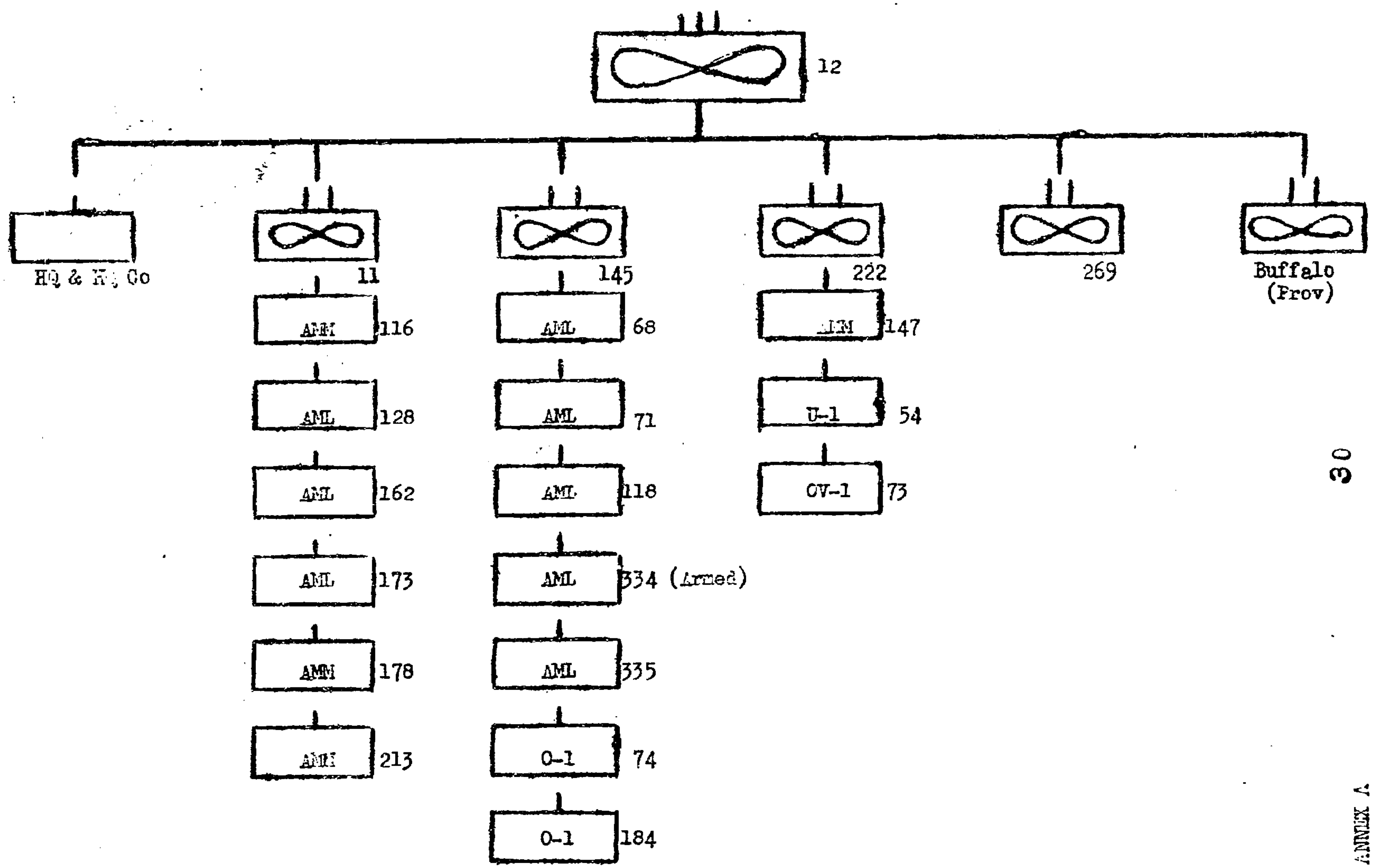
12TH COMBAT AVIATION GROUP AVIATION STRUCTURE



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ANNEX A

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12TH GROUP TROOP LIST

UNIT	LOCATION
12TH CBT AVN GP	Long Binh
HQ & HQ Co	Long Binh
391st QM Det (PETRL)	Long Binh
BUFFALO CBT AVN BN (PROV)	Bear Cat
HQ & HQ Co	Bear Cat
11TH CBT AVN BN	Phu Loi
HQ & HQ Co	Phu Loi
390th QM Det (PETRL)	Long Binh
116th Aslt Hel Co	Cu Chi
283rd SC Det (RL)	Cu Chi
392nd TC Det (KD)	Cu Chi
431st Med Det (OA)	Cu Chi
128th Aslt Hel Co	Pho Loi
285th SC Det (RL)	Phu Loi
393rd TC Det (KD)	Phu Loi
432nd Med Det (OA)	Phu Loi
173rd Aslt Hel Co	Lai Khe
408th TC Det (KD)	Lai Khe
451st SC Det (RL)	Lai Khe
759th Med Det (OA)	Lai Khe
162nd Aslt Hel Co	Phuoc Vinh
407th TC Det (KD)	Phuoc Vinh
450th SC Det (RL)	Phuoc Vinh
758th Med Det (OA)	Phuoc Vinh
213th Cbt Aslt Spt Hel Co	Phu Loi
329th TC Det (AB)	Phu Loi
178th Aslt Spt Hel Co	Phu Loi
400th TC Det (AB)	Phu Loi
145th CBT AVN BN	Bien Hoa
HQ & HQ Co	Bien Hoa
87th QM Det (PETRL)	Bien Hoa
145th Sec Plat	Bien Hoa
68th Aslt Hel Co	Bien Hoa
282nd SC Det (RL)	Bien Hoa
391st TC Det (KD)	Bien Hoa
430th Med Det (OA)	Bien Hoa
269TH CBT AVN BN	Cu Chi
HQ & HQ Co	Cu Chi

"AIR MOVEMENT DATA"

INF CO AND BN VIA UH-10
105 HOW BTRY AND BN VIA CH-47

RESUPPLY / DAY
8 SORTIES (LIGHT CONTACT)

INF CO 100 TRPS – HOURS TO MOVE
15 SORTIES

NO UH-10	LIFTS	DISTANCE
10	1.6	10 KM 0+16
		25 KM 0+34
		50 KM 1+07
20	0.8	10 KM 0+08
		25 KM 0+14
		50 KM 0+23
30	0.5	10 KM
		25 KM
		50 KM

RESUPPLY / DAY
31 SORTIES (LIGHT CONTACT)

INF BN 350 TRPS – HOURS TO MOVE
50 SORTIES

NO UH-10	LIFTS	DISTANCE
10	5	10 KM 0+45
		25 KM 1+40
		50 KM 3+49
20	2.5	10 KM 0+28
		25 KM 0+58
		50 KM 1+53
30	1.7	10 KM 0+20
		25 KM 0+36
		50 KM 1+31

RESUPPLY / DAY
9 SORTIES (LIGHT CONTACT)

INF CO 140 TRPS – HOURS TO MOVE
20 SORTIES

NO UH-10	LIFTS	DISTANCE
10	2	10 KM 0+16
		25 KM 0+34
		50 KM 1+07
20	1	10 KM 0+08
		25 KM 0+14
		50 KM 0+25
30	0.7	10 KM
		25 KM
		50 KM

RESUPPLY / DAY
34 SORTIES (LIGHT CONTACT)

INF BN 520 TRPS – HOURS TO MOVE
75 SORTIES

NO UH-10	LIFTS	DISTANCE
10	7.5	10 KM 1+16
		25 KM 3+16
		50 KM
20	3.3	10 KM 0+36
		25 KM 1+20
		50 KM 3+38
30	2.5	10 KM 0+30
		25 KM 1+00
		50 KM

RESUPPLY / DAY
10 SORTIES (LIGHT CONTACT)

INF CO 175 TRPS – HOURS TO MOVE
25 SORTIES

NO UH-10	LIFTS	DISTANCE
10	2.5	10 KM 0+20
		25 KM 0+46
		50 KM 1+34
20	1.3	10 KM 0+15
		25 KM 0+26
		50 KM 1+00
30	0.8	10 KM 0+10
		25 KM 0+16
		50 KM 0+27

RESUPPLY / DAY
37 SORTIES (LIGHT CONTACT)

INF BN 625 TRPS – HOURS TO MOVE
90 SORTIES

NO UH-10	LIFTS	DISTANCE
10	9	10 KM 1+26
		25 KM 3+36
		50 KM
20	4.5	10 KM 0+40
		25 KM 1+42
		50 KM 4+21
30	3	10 KM 0+30
		25 KM 1+00
		50 KM

105mm HOW BTRY – HOURS TO MOVE
13 SORTIES
(960 RNDS AMMO)

NO CH-47	LIFTS	DISTANCE
2	6.5	10 KM 1+25
		25 KM 3+00
		50 KM 6+00
4	3.3	10 KM 0+43
		25 KM 1+25
		50 KM 3+00
6	2.2	10 KM 0+35
		25 KM 1+00
		50 KM 2+30

AMMO RESUPPLY
D+1 10 SORTIES 1600 RNDS
D+2 1 SORTIE 160 RNDS (LIGHT CONTACT)
3 SORTIES 480 RNDS (MOD CONTACT)
6 SORTIES 960 RNDS (HVY CONTACT)

WATER AND RATIONS
2 SORTIES PER DAY

105mm HOW BN – HOURS TO MOVE
45 SORTIES
(960 RNDS AMMO / BTRY)

CH-47	LIFTS	DISTANCE
2	22.5	10 KM 7+30
		25 KM 13+00
		50 KM 25+00
4	11.3	10 KM 4+00
		25 KM 6+00
		50 KM 13+00
6	7.5	10 KM 3+00
		25 KM 4+00
		50 KM 10+00

NOTE: INCLUDES LOADING AND REFUELING TIME

12TH CAV AVN BN
(14 DEC 66)
DRAWN BY: [illegible]

ANNEX C

BODY ARMOR AND FRAGMENTATION WOUNDS

By ROBERT M. LESSER
Major, MC
12th Cbt Avn Gp Bat Surgeon

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The mission was a combat assault into a "hot" LZ. The "slicks were just about to touch down when a round blasted up through the left chin buble of the "Huey" and slammed dead center into the co-pilot's chest Protector (Armor, Aircrewmen, Small Arms Protective, Front with carrier). The Chest Protector worked as advertised and one highly trained aviator's life was saved. That should have been the happy ending of the story; unfortunately it was not. The round impacted on the Chest Protector and one of the resultant secondary metallic fragments tore into the aviator's knee joint and put him out of action for a week.

In another similar incident, a round struck the right seat pilot's Chest Protector, did not penetrate but fragmented, and one of the jagged pieces of red hot slug that spatter off the Chest Protector in such instances, slashed into the co-pilot's eye, destroying it.

The frequency of such incidents generated the need for a study to determine whether a significant number of injuries occurring from ricocheting secondary metallic fragments formed when rounds impact on the Chest Protector could be prevented.

With the air of finding a practical solution to thisproblem, a field test was conducted at the request of the 12th Combat Aviation Group Commander, Col. Raymond P. Campbell Jr. The tests consisted of firing an M-14 rifle with 7.62 ball ammunition from a range of 150 meters at various Flak Vests (Armor; Body, Fragmentation, Protective, Upper Torso)/Chest Protector configurations.

To demonstrate that metallic secondary fragments do result from rounds impacting on, but not completely penetrating, the Chest Protector, rounds were fired at Chest Protectors without Flak Vests worn outside them. Cardboard posterboards were placed 1 foot laterally and parallel to the line of fire on both sides of the target. A typical example of the elliptical fragment patterns that resulted measured 10 X 24 inches and left fragments embedded in the cardboard.

The test results proved conclusively that these secondary fragments can very effectively be trapped by the Flak Vests when it is worn outside the Chest Protector. Figures 2, 3, and 4 are views of the outer surfaces of Flak Vests which were worn external to the Chest Protector and show the clean holes of entry through which the rounds penetrated, continued to strike the Chest Protedtor, and there burst into fragments. Figures 5, 6 and 7 are views of the inner surfaces of these same Flak Vests showing the pattern formed when the resultant ricocheting secondary fragments are trapped inside the Flak Vest. Referring to Figures 2, 3 and 4 again, one notes the absence of any Patterns of fragments emerging from the outer surface of the Flak Vest thereby demonstrating the failure of these secondary ricocheting fragments to exit the Flak Vest. In fact, during the entire duration of the field tests, in every single instance the Flak Vest, when worn outside (external to) the Chest Protector, did completely stop the fragments from penetrating outward.

ANNEX D

Figure 1 shows the front of a Chest Protector which had no Flak Vest worn external to it. The round struck the anterior midline slightly below the pocket and the resultant secondary metallic fragments recocheted upward, slashing the pocket to ribbons. Had this been worn by an actual person, the fragments would have torn into the wearer's neck, chin and/or face. With a Flak Vest worn outside his Chest Protector all this aviator would have had as a result of this episode was a good story to tell at Happy Hour instead of a neck or face full of shrapnel. 42

The lessons learned in the field tests are clear:

(1) The Flak Vest worn in conjunction with and external to the Chest Protector will absorb recocheting secondary fragments.

(2) The Flak Vest worn inside and under the Chest Protector serves no useful purpose. Rounds that do penetrate the Chest Protector will also penetrate the Flak Vest. Rounds fragmenting off the Chest Protector will create dangerous fragments which can wound the wearer or others in the aircraft.

The choice is clear: Either wear the Flak Vest external to the Chest Protector or don't wear the Flak Vest at all. With the Flak Vest outside you may be a bit warmer and more uncomfortable but you'll be safe from fragmentation injury. With no Flak Vest you will be a little more comfortable, but will run the very real risk of subjecting yourself or others in the aircraft to potentially serious fragmentation injuries.

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Local Neg No: 53 Sig - 1433-7/A6A-66
Geographic: REPUBLIC OF VIETNAM
Location: Bien Hoa
Date: Dec 66

Subject: Picture shows the front of a Chest Protector which had no flak vest worn external to it, demonstrating effects of secondary metallic fragments.

Unit; 12th Combat Aviation Group
Photo by: 53d Signal Bn
Appendix 1 to Annex D

Local Neg No: 53 Sig - 1433-6/66-66
Geographic: REPUBLIC OF VIETNAM
Location: Bien Hoa
Date: Dec 66

Subject: Pictures 2, 3, 4 show outside of flak vests when they were worn external to Chest Protector. Clean holes of rounds entering are shown and the lack of patterns created by secondary fragments demonstrate the fact that these were absorbed by and hence did not penetrate the flak vests after ricocheting off the Chest Protector.

Unit: 12th Combat Aviation Group
Photo by: 53d Signal Bn
Appendix 2 to Annex D

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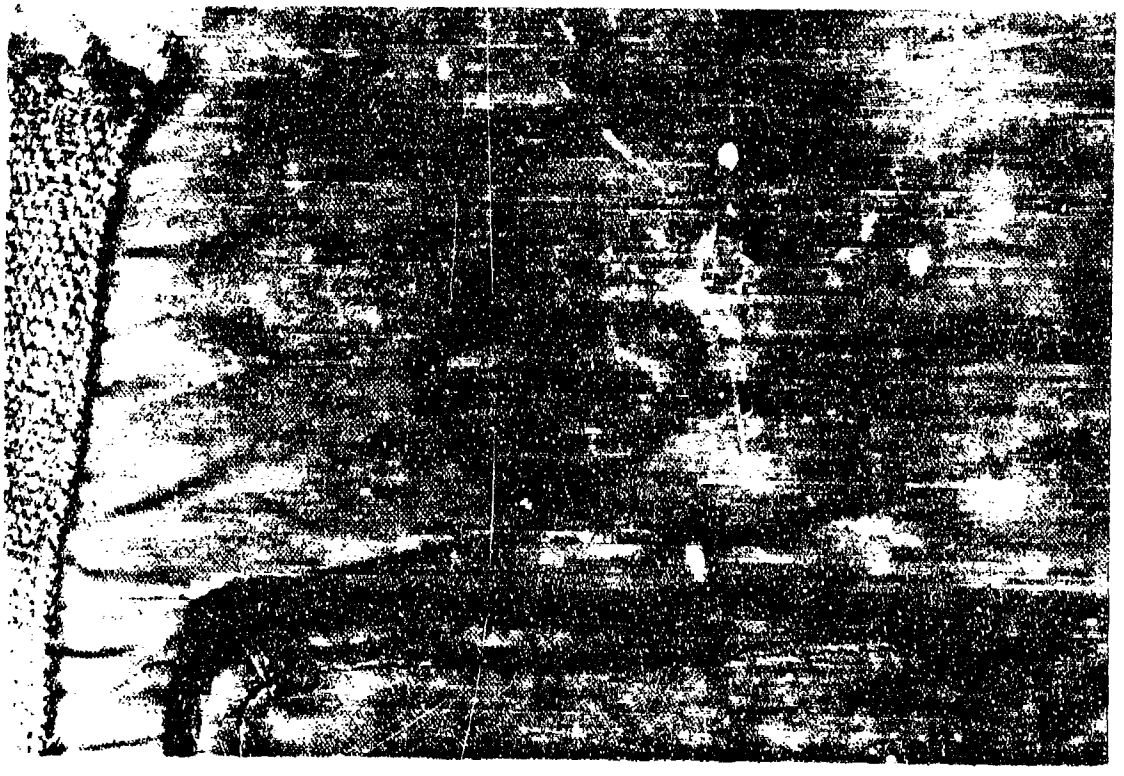

Local Reg No: 53 Sig - 1433-4/..6-66
Geographic: REPUBLIC OF VIETNAM
Location: Bien Hoa
Date: Dec 66

Subject: Pictures 2, 3, 4 show outside of flak vests when they were worn external to Chest Protector. Clean holes of rounds entering are shown and the lack of patterns created by secondary fragments demonstrate the fact that these were absorbed by and hence did not penetrate the flak vests after ricocheting off the Chest Protector.

Unit: 12th Combat Aviation Group
Photo by: 53d Signal Bn
Appendix 3 to Annex D

Local Neg No: 53 Sig - 1433-6/A6A-66
Geographic: REPUBLIC OF VIETNAM
Location: Bien Hoa
Date: Dec 66

Subject: Pictures 2, 3, 4 show outside of flak vests when they were worn external to Chest Protector. Clean holes of rounds entering are shown and the lack of patterns created by secondary fragments demonstrate the fact that these were absorbed by and hence did not penetrate the flak vests after ricocheting off the Chest Protector.

Unit: 12th Combat Aviation Group
Photo by: 53d Signal Bn
Appendix 4 to Annex D

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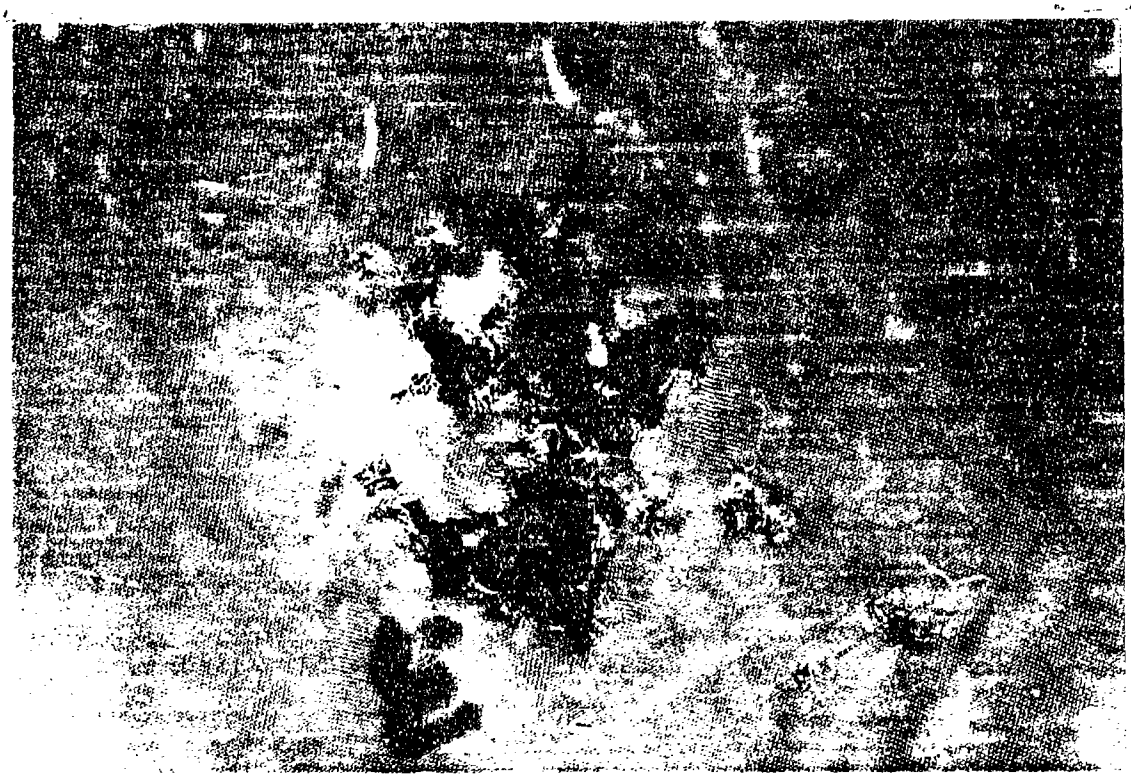
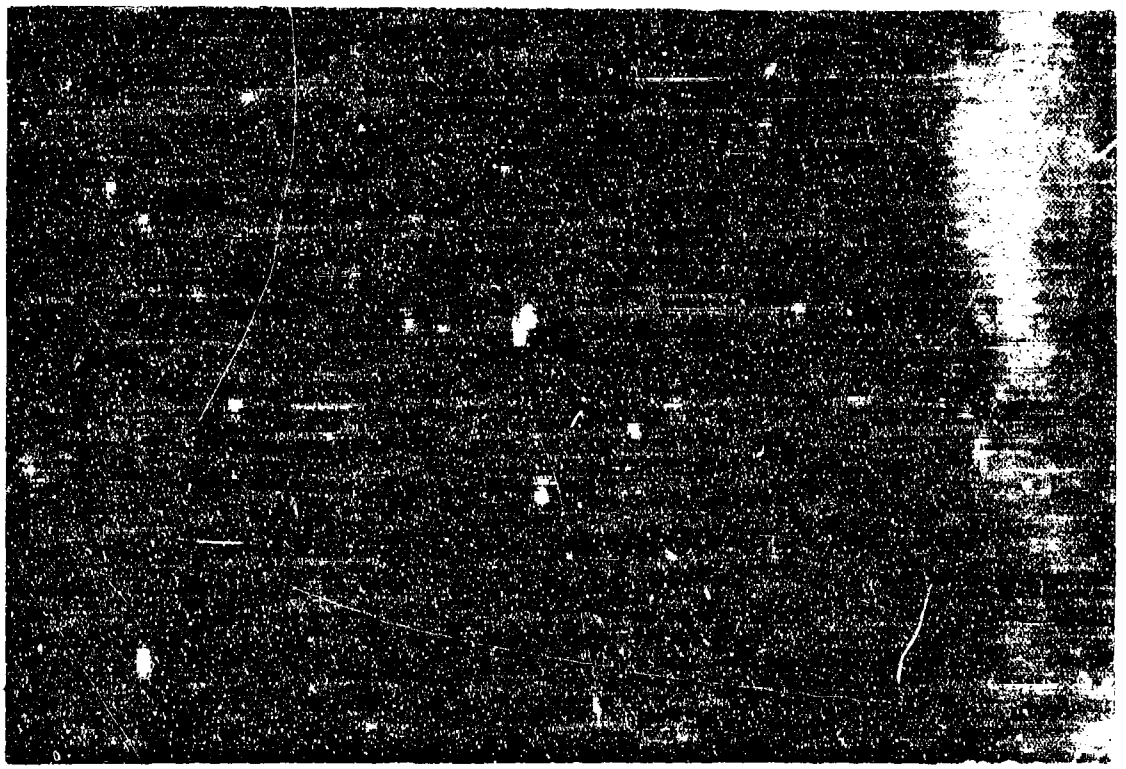


Local Reg No: 53 Sig - 1433-3/A6A-66
Geographic: REPUBLIC OF VIETNAM
Location: Bien Hoa
Date: Dec 66

Subject: Three views of the inner surfaces of some flak vests as in 2, 3, 4 showing how secondary fragments were absorbed by jacket.

Unit: 12th Combat Aviation Group
Photo by: 53d Signal Bn
Appendix 5 to Annex D



Local Leg No: 53 Sig - 1433-3/.6A-66
Geographic: REPUBLIC OF VIETNAM
Location: Bien Hoa
Date: Dec 66

Subject: Three views of the inner surfaces of some flak vests as in 2, 3, 4 showing how secondary fragments were absorbed by jacket.

Unit: 12th Combat Aviation Group
Photo by: 53d Signal Bn
Appendix 6 to Annex D

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Local Neg No: 53 Sig - 1433-1/A6A-66
Geographic: REPUBLIC OF VIETNAM
Location: Bien Hoa
Date: Dec 66

Subject: Three views of the inner surfaces of some flak vests as in 2, 3, 4 showing how secondary fragments were absorbed by jacket.

Unit: 12th Combat Aviation Group
Photo by: 53d Signal Bn
Appendix 7 to Annex D

PILOTS CHECKLIST
UH-1B & C MINE DISPENSING SUBSYSTEM (XM-47)

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PREFLIGHT (performed after electrical checkout with XM-68 test set)

1. Pilot should insure that the armorers XM-47 checklist was used to prepare the subsystem and that the checklist is filled out.

2. Check the gages in the forward end of the XM-2 cannisters to assure that the gages read in the operational (solid green) zone.

3. Assure that the intervalometer toggle switch is set on "EXT ARM" and that the firing mode prescribed is set on the face of the intervalometer.

4. Check to insure that the sway braces are adjusted and that the subsystem XM-47 is secure on the Kellet Rack.

5. Check to insure that the red, "REMOVE BEFORE FLIGHT" flag and safety pin is in place. The safety pin will be removed when in the objective area.

COCKPIT CHECK

1. Before starting, assure that the firing panel on the helicopter is set as follows:

a. "ARM" switch in the safe position.

b. Mode selector switch in the position prescribed by the mission commander.

2. Pull out jettison circuit breaker and insure that the jettison switch indicates safe. NOTE: If subsystem has to be jettisoned, push in circuit breaker and move jettison control switch to the jettison position. If electrical jettison fails, activate lever on right side of pedestal labeled "DANGER - Pull to jettison external store."

3. After engine start heater blanket power is provided by the main generator.

4. Left and right green ready lamps should light. Red warning light should not light. Check "PRESS TO TEST" warning light to insure that the bulb is functional. WARNING: IF LEFT AND/OR RIGHT READY LAMP DOES NOT LIGHT OR IF THE RED WARNING LIGHT IS ON, SHUT THE AIRCRAFT DOWN AND HAVE THE AIRCRAFT ARMORER INSPECT THE SUBSYSTEM TO DETERMINE THE CAUSE OF THE MALFUNCTION.

Annex E

IN-FLIGHT CHECK

1. The doorgunner and crewchief should visually monitor the pressure gages on the forward end of the XM-2 cannisters and report any loss of pressure to the pilot. 52

2. During flight the left and right green ready lamps should remain on and the red warning light should remain off. The red warning light provides constant monitoring of operational condition of the subsystem during flight. WARNING: IF RED MONITORING LIGHT GOES ON DURING FLIGHT OR IF THE CREW REPORTS LOSS OF CANNISTER PRESSURE (i.e. Bullet fired into subsystem, etc), THE DISPENSER WILL BE CONSIDERED HAZARDOUS AND WILL BE JETTISIONED FROM THE AIRCRAFT IMMEDIATELY OR AS SOON AS POSIBLE. IN NO CASE SHOULD SUBSYSTEM BE CARRIED IN THIS CONDITION FOR PERIODS IN EXCESS OF 5 MINUTES. NOTE: THE MISSION COMMANDER WILL MAKE THE DECISION WHERE AND WHEN SUBSYSTEMS SHOULD BE JETTISIONED BASED ON THE TACTICAL SITUATION. THE SUBSYSTEM SHOULD BE JETTISIONED FROM AT LEAST 1000 FEET ABSOLUTE IF POSSIBLE IN ORDER TO OBTAIN A HIGH ORDER DETONATION OF THE MINES. IF THE MINES DO NOT DETONATE ON IMPACT AND THERE IS A POSSIBILITY THAT THE MATERIAL MAY BE CAPTURED, THE MISSION COMMANDER SHOULD TAKE THE SUBSYSTEMS UNDER FIRE SO AS TO PUNCTURE THE CANNISTERS AND/OR CAUSE THE MINES TO DETONATE. THE MINIMUM SAFE DISTANCE FOR FIRING INTO THE SUBSYSTEMS IS 200 METERS. THE MISSION COMMANDER MUST EXERCISE EXTREME CAUTION AND GOOD JUDGEMENT IN THE SELECTION OF JETTISON AREAS.

3. Upon arrival in the objective area the pilot will instruct the crewchief and gunner to pull the safety pins out of the top of the left and right subsystems. The crewchief and gunner will report to the pilot when the safety pins are out.

4. When the target area is approached and if the left and right green ready lamps are lit and the red warning light is out, raise the red cover over "ARM" switch and actuate "ARM" switch. NOTE: If one or both of the green ready lights is not lit "DO NOT ARM THE SUBSYSTEM". Arming of the subsystem may fire the cannisters. When one or both green ready lights are not lighted and the red warning light is not on, the mission should be aborted and the subsystems returned to the staging area for checkout. WARNING: If the red warning light comes on either by itself or in any combination with the green ready lights, jettison the subsystem within five minutes.

5. When 40 to 50 meters from the target, press "FIRE" button only once. For manual fire 1 pair/pulse, button must be pressed four times. For manual fire 2 pair/pulse, button must be pressed two times. NOTE: WHEN A CANNISTER IS FIRED THE RED WARNING LIGHT WILL LIGHT. WHEN ALL MINES IN THE CANNISTER HAVE BEEN EJECTED THE RED WARNING LIGHT WILL GO OUT. WHEN MISSION IS COMPLETED, AND ALL CANNISTERS HAVE FIRED, THE RED WARNING LIGHT SHOULD NO BE LIT. WARNING: IF WARNING LIGHT IS ON 10 SECONDS AFTER THE COMPLETION OF THE MISSION, THE SUBSYSTEM SHOULD BE JETTISIONED IMMEDIATELY OR AS SOON AS POSSIBLE. IF THE WARNING LIGHT COMES ON FOR AN

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OBSERVABLE TIME (5 MINUTES) AFTER FIRING THE SUBSYSTEM, IT INDICATES THAT THE FRACTURE VALVE HAS NOT BROKEN AS INTENDED AND THAT NITROGEN IS "BLEEDING" OUT OF THE AFT END. ADDITIONALLY, EARLY INDICATION OF FRACTURE VALVE FAILURE WILL BE DETECTED BY HAVING THE CREWCHIEF AND GUNNER CHECK THE PRESSURE GAGES ON THE XM-2 CANISTERS AFTER THE FIRING PASS IS COMPLETE. THE GAGES SHOULD ALL READ IN THE DESTROY (RED) ZONE. IF ANY OF THE GAGES READ IN THE OPERATIONAL (GREEN) ZONE, A FRACTURE VALVE FAILURE IS INDICATED. THE SUBSYSTEM SHOULD BE JETTISIONED IMMEDIATELY OR AS SOON AS POSSIBLE. IN NO CASE SHOULD HAZARDOUS SUBSYSTEMS BE CARRIED IN EXCESS OF 5 MINUTES.

6. Safety - The following checks are necessary before mission termination:

a. The mission commander will coordinate an air to air check between aircraft in order to check the condition of subsystems.

b. The mission commander will select an isolated landing area where the XM-47 subsystems can be visually checked before the aircraft are released from the mission. WARNING: If during the inspection, mines are discovered aft of the piston or stuck in the shroud assembly, notify EOD personnel.

7. The expended subsystems will be returned to the area designated by the mission commander

DATE: _____

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Test Set: TH-68, Serial Number_____ has been checked by me and has been found in good working condition.

NAME _____

RANK _____

S/N _____

NOTE: PERFORM SELF TEST OF XM-68 TEST SET ONCE A DAY PRIOR USE.

A. Internal Battery Power Test.

1. Check batteries.

NOTE: USING A MULTIMETER TS-352/V OR AN/PSM6, MEASURE THE TEST SET INTERNAL BATTERY VOLTAGE, USING THE "INTERNAL BATTERY TEST" JACKS LABELED WITH A "PLUS" (+) AND MINUS (-). THE INTERNAL BATTERY VOLTAGE SHALL BE AT LEAST 20 V DC. REPLACE ALL INTERNAL 6 VOLT BATTERIES IF THE VOLTAGE MEASURES LESS THAN 20 V DC.

2. Set the test set "POWER ON" switch to the "INTERNAL" position (the green "POWER ON" indicator lamp should be light). ____(Set)

3. Depress the following press to test indicator lamps. They should light.

(a) Armed___(Pressed)___(Lit).

(b) Pickle___(Pressed)___(Lit).

(c) Power on___(Pressed)___(Lit)

NOTE: THIS LAMP SHOULD GO OUT MOMENTARILY AS IT IS BEING PRESSED AND THEN SHOULD COME BACK ON.

(d) Ready___(Pressed)___(Lit).

(e) Monitor___(Pressed)___(Lit).

(f) Armed___(Pressed)___(Lit).

(g) Pickled___(Pressed)___(Lit).

4. Depress the test set "LAMP TEST" push button. All four "SQUIB CIRCUITS" indicator lamps should light simultaneously. ____(Depressed)

___ ___ ___ ___

(Lit)

5. Reset the test set "POWER SELECT" switch to its center "OFF" position. The green "POWER ON" lamp should go out. ____(Reset)

____(Lamp Out)

6. Verify the following.

57 (a) The XM-68 test set "SAFE ARM" switch shall be in the guarded position. ___(Verified)

(b) The XM-68 test set "AIRCRAFT-OFF-PICKLE" switch shall be in its center "OFF" position. ___(Verified)

(c) The squib test "CIRCUIT SELECT" switch on the XM-68 test set shall be set to its "OFF" position. ___(Verified)

B. External Power Source Test.

NOTE: A. IF A/C POWER IS TO BE USED PERFORM STEPS 1 TO 18.

B. IF AN EXTERNAL POWER SOURCE IS TO BE USED PERFORM STEPS 19 TO 32.

1. Connect the "AIRCRAFT PYLON CABLE" (found in cover of test set) to test set J-1 "EXTERNAL INPUT RIGHT" CLE". ___(Connected)

2. Connect the air raft pylon cable of test set to aircraft pylon cable on aircraft. ___(Connected)

3. Using aircraft checklist provide HEATER ELEMENT RIGHT CLE POWER (28 V DC). ___(Power Provided)

4. Check and note polarity of wall receptacle. ___(Checked)

5. Connect "WING DISPENSING FIRING PANEL" power plug to wall receptacle with the proper polarity as determined in step (4).

NOTE: POSITIVE LEAD ON PLUG IS MARKED WITH + SIGN. ___(Connected)

6. Set "WING DISPENSING FIRING PANEL" selector switch (Left, Both, Auto) to the "BOTH" position. ___(Set)

7. Set "SAFE ARM" switch located on "WING DISPENSING FIRING PANEL" to the armed position. ___(Set)

8. Check if the amber "ARM" lamp on XM-68 test set lights. __(Cecked)

9. Press fire button on "WING DISPENSING FIRING PANEL" the pickle lamp on XM-68 test set should light. 47 ___(Pressed)

10. Set the test set "POWER SELECT SWITCH" on the XM-68 test set to the external position. The green power on lamp should light. ____(Set)

____(Lit)

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11. Depress the following press to test indicator lamps. They should light.

(a) Armed___(Pressed)___(Lit).

(b) Peikle___(Pressed)___(Lit).

(c) Power on___(Pressed)___(Lit).

NOTE: THIS LAMP SHOULD GO OUT MOMENTARILY AS IT IS BEING PRESSED AND THEN SHOULD COME BACK ON.

(d) Ready___(Pressed)___(Lit).

(e) Monitor___(Pressed)___(Lit).

(f) Armed___(Pressed)___(Lit).

(g) Pickled___(Pressed)___(Lit)

12. Depress the test set "LAMP TEST" push button. All four "SQUIB CIRCUITS" indicator lamps should light simultaneously. ____(Depressed)

____ ____ ____ ____

(Lit)

13. Reset the test set "POWER SELECT" switch to its center "OFF" position the green "POWER ON" lamp should go out. ____(Reset)

____(Lamp Out)

14. Close the "SAFE ARM" switch cover on the mine dispersing firing panel. The "SAFE ARM" switch will automatically return to the "Safe" position and the amber "ARM" light on the XM-68 test set should go out. ____(Closed)

____(Lamp Out)

15. Disconnect the "AIRCRAFT PYLON CABLE" on the XM-68 test set from the "AIRCRAFT PYLON CABLE" on the aircraft. ____(Disconnected)

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16. Verify the following:

(a) The MH-68 test set "SAFE ARM" switch shall be in the guarded (depressed guard) "SAFE" position. ___(Verified)

17. Disconnect test set "AIRCRAFT PYLON CABLE" from receptacle. ___(Disconnected)

18. Return "AIRCRAFT PYLON CABLE" to cover of test set. ___ (Returned)

19. Connect the "EXTERNAL POWER SUPPLY ADAPTER" assembly found in cover of test set to test set J-1 receptacle. ___(Connected)

20. Connect "ADAPTER" leads to a 28 V DC source.

NOTE RED LEAD IS POSITIVE, BLACK LEAD IS NEGATIVE. CONNECT APPROPRIATE LEAD TO APPROPRIATE TERMINAL ON POWER SOURCE. ___(Connected)

21. If power supply is used, turn on power supply and adjust to 28 V DC. ___(Turned On)

22. Check if amber "ARM" and amber "PICKLE" lamps light. ___(Checked)

23. Set the test set "POWER SELECT SWITCH" to external position. ___(Set)

24. Check if the green "POWER ON" lamp lights. ___(Checked)

25. Depress the following press to test indicator lamps. They should light. (a) Armed___(Pressed)___(Lit).

(b) Pickle___(Pressed)___(Lit).

(c) Power on___(Pressed)___(Lit).

NOTE: THIS LAMP SHOULD GO OUT MOMENTARILY AS IT IS BEING PRESSED AND THEN SHOULD COME BACK ON.

(d) Ready___(Pressed)___(Lit).

(e) Monitor___(Pressed)___(Lit).

(f) Armed___(Pressed)___(Lit).

(g) Pickled___(Pressed)___(Lit).

26. Depress the test set "LAMP TEST" push button. All four "SQUIB

Data Sheet for: Mine Dispersing Sub-system, Aircraft: XM-47

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Checklist for Reloading Dispenser: XM-3

NOTE: THIS DATA SHEET IS FOR USE IN RELOADING OPERATIONS FOR XM-47 SUB-SYSTEM. IT IS INTENDED TO BE A RECORD FOR THE RELOADING OF EACH SUB-SYSTEM, TO REMAIN ATTACHED TO THE CHECKLIST.

1. Date:_____.

2. Reload crew supervisor:_____.

3. Lot No. of reload kit:_____.

4 S/N and lot no. of each XM-2 canister in kit:_____

_____.

5. S/N of XM-3 dispenser:_____.

6. Has electrical checkout been accomplished? (YES, NO)

7. Name of individual completing electrical checkout:_____

_____.

8. Item No. 7 supervised by:_____.

A. Removal of canisters.

CAUTION: CANISTER REMOVAL OR INSTALLATION PROCEDURE REQUIRES A MINIMUM OF TWO (2 MEN.

1. Place dispenser in a V-type cradle or suitable holding device.

____(Placed)

NOTE: PLACE WITH MOUNTING LUGS ON TOP AND ASSURE THAT MACHINE BOLTS ON BOTH ENDS OF DISPENSER ARE EXPOSED.

a. Remove the mine dispenser nose fairing by lossening screws (do not completely remove screws). ____(Screws Losened)

b. Rotate the nose fairing approximately 1/2 inch counterclockwise. ____(Rotated)

c. Pull nose fairing straight out to remove from sub-system.

____(Removed)

d. Retain nose fairing for future use. ____(Removed)

____Retained)

2. Remove and retain shroud for future use ____(Removed)

3. Remove intervalometer as follows:

a. Remove steel locking wire from 2 connectors on intervalometer using diagonal cutting pliers. ____(Removed)

b. Remove the 3 connectors from the intervalometer.

____(Removed)

c. Loosen quick-release latch on the hose clamp by using 3/8" open end wrench. ____(Loosened)

d. Remove and retain clamp from around intervalometer and 2 lower canisters. ____(Removed)

e. Remove and retain the following: intervalometer and 3 rubber pads. ____(Removed)

____(Retained)

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4. Cut steel locking wires on all 4 canister electrical connectors.

5. Disconnect all 8 electrical connectors from canisters.

____(Disconnected)

6. Cut and remove steel wires (locking) securing the machine bolts in 4 positions at forward and aft end of disponser XM-3.

____(Removed)

NOTE: WHEN REMOVING THE MACHINE BOLTS, INSERT EDGES UNDER THE TWO TOP CANISTERS BEING REMOVED, TO KEEP THEM FROM DROPPING OUT OF POSITION AGAINST THE LOWER CANISTERS, THEREBY RESTRICTING THE REMOVAL OF THE TIE DOWN STRAPS AFTER THE MACHINE BOLTS HAVE BEEN REMOVED.

7. Remove the two top canisters, one at a time, as follows:

a. Remove machine bolts, two at the forward and two at the aft end of the disponser, which secure the two top mine canister tie down straps. ____(Removed)

b. Remove the canister tie down straps from the forward and aft end of the disponser. ____(Removed)

c. Slide the canister out of the disponser from the aft end. ____(Removed)

8. Remove the two bottom canisters as above. ____(Removed)

9. Visually inspect the disponser for the following defects.

a. Punctures, tears, or cracks that would expose canisters. ____(Inspected)

b. Broken or mission suspension lugs. ____(Inspected)

c. Defective or missing electrical connectors. ____(Inspected)

d. Damaged or broken wiring. ____(Inspected)

NOTE: A DISPENSER HAVING THE ABOVE DEFECTS, WILL BE CONSIDERED UNSERVICEABLE UNTIL THE CONDITION IS CORRECTED OR DISPOSITION INSTRUCTIONS ARE PROVIDED. (REFERENCE TM 9-1345-201-15/1 Chapter 4)

C. Play out umbilical cord on top of dispenser and tape cord down. ____(Tied Down)

B. Unpacking Kit and Dispenser Loading.

1. Cut seal, if present, on wooden shipping and storage container door. ____(Seal Cut)

WARNING: BEFORE UNPACKING REPLACEMENT CANISTER KIT, VISUALLY CHECK PRESSURE IN CANISTERS. VISUALLY INSPECT THROUGH DOOR IN FORWARD END OF CONTAINER TO ASSURE THAT GAUGES READ IN THE OPERATIONAL (SOLID GREEN) ZONE. IF READING IS IN THE INOPERATIVE ZONE, THE CANISTERS IN CONTAINER SHOULD BE REMOVED TO A SAFE AREA FOR DISPOSITION. IF READING IS IN THE DESTROY ZONE, PRESSURE HAS BEEN OR IS BEING LOST. DO NOT MOVE CONTAINER, IMMEDIATELY NOTIFY PERSONNEL DESIGNATED TO PERFORM SAFING PROCEDURES.

CAUTION: LOADING OPERATIONS REQUIRE A MINIMUM OF TWO MEN.

2. Open door and disconnect harness assembly from all four canisters. ____(Door Open)

____(Disconnected)

3. Cut the five lateral metal strips. ____(Cut)

4. Remove lug bolts or nails from cover using a 3/8 inch wrench. ____(Removed)

5. Take off cover and remove the polystyrene saddle tops. ____(Removed)

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6. Remove safety pin with red flag (in barrier bag) and retain for future use. ____(Removed)

CAUTION: IF CANISTERS ARE LIFTED WITHOUT CLEARING END PADS OR SPACERS, THERE IS A DANGER OF SNAPPING OFF PRESSURE SWITCHES WHICH PROTRUDE FROM CANISTERS INTO PADDED AREA.

7. Lift aft end of canister (top two first, one at a time) sufficiently to clear pressure switch and lift canister out of container. Transfer to dispenser to be loaded. ____(Lifted)

____(Transfered)

8. Slide the two top canisters, in the reload kit, one at a time into the bottom half of the dispenser so that the third ring of the canister alines with the position portion of the bulkhead at the aft end of the dispensor. ____(Installed)

9. Attach the forward and aft canister tie down straps. ____(Attached)

10. Insert and evenly tighten the four machine bolts at each end of the dispenser, which secure the bottom tie down straps and canister, using a wrench with a 7/16" opening. ____(Inserted)

____(Tightened)

11. Torque machine bolts to 50-60 inch pounds. ____(Torqued)

12. Remove container middle saddle pads. ____(Removed)

13. Lift bottom two canisters out of the container, one at a time. ____(Lifted Out)

14. Slide the two top canisters, one at a time, into the dispenser so that the fourth ring on the canister alines with the

positioning portion of the bulkhead at the aft end of the dispenser. 66

____(Installed)

15. Insert and secure the forward and aft canister tie down straps. ____(Inserted)

____(Secured)

NOTE: INSERT WOODEN WEDGES UNDER THE TWO TOP CANISTERS BEING INSERTED TO KEEP THEM FROM DROPPING OUT OF POSITION AGAINST THE LOWER CANISTERS WHILE TIE DOWN STRAPS BEING SECURED.

16. Insert and evenly tighten the four machine bolts at each end of the dispenser, which secure the tie down straps using a wrench with a 7/16 inch opening. ____(Inserted)

____(Tightened)

17. Torque to 50-60 inch pounds. ____(Torqued)

18. Insert steel wire (locking) .032 diameter through holes in all machine bolt heads at forward and aft ends of dispenser. Secure with pliers. ____(Inserted)

____(Secured)

19. Install intervalometer as follows:

a. Place a rubber pad on each of the forward ends of the bottom two canisters. ____(Placed)

b. Place intervalometer in position on the bottom canisters at the forward end. ____(Placed)

c. Leave a 1/8 inch gap between rear of intervalometer and top canisters. ____(Left)

d. Place a rubber pad on top of intervalometer.

____(Placed)

e. Install hose clamp and tighten, quick release latch.

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____Installed)

____(Tightened)

20. Attach "FIRING CIRCUIT" and pressure monitor circuit connector to top connector on intervalometer. ____(Attached)

21. Attach "PRESSURE and BREAK WIRE" connector to connector on left side of intervalometer. ____(Attached)

22. Insert steel wire (locking) 032 diameter and secure with pliers. ____(Inserted)

____(Secured)

23. Attach pressure connector to each canister. Insert steel wire (locking) .018 diameter and secure with pliers. ____(Attached)

____(Secured)

24. Perform electrical test as outlined in paragraph 7-14 a (9) in TM 9-1345-201-15/1. ____(Performed)

25. Attach "SQUIB CONNECTOR" to connector on right side of the intervalometer. ____(Attached)

NOTE: IF THE SUB-SYSTEM IS TO BE RETURNED TO STORAGE PERFORM THE FOLLOWING ADDITIONAL STEPS.

26 Install the adaptor assembly fairing support and mine dispenser fairing onto the aft end of the dispenser. ____(Installed)

27. Remove mine canister openers from wooden container and place them in the wire cages in container XM-551. ____(Returned)

28. Pack dispersing sub-system into container XM-551 (refer to paragraph 2-19 TM 9-1345-201-15/1). ____(Packed)

DATA SHEET FOR:

Mine Dispersing subsystem, aircraft: XM-47 interim checklist for preparation and use.

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NOTE: THIS DATA SHEET IS FOR USE IN LOADING OPERATIONS OF XM-47. IT IS INTENDED TO BE A RECORD FOR THE LOADING OF EACH SUBSYSTEM, TO REMAIN ATTACHED TO THE CHECKLIST.

1. Date:
2. Aircraft No:
3. Pilots name:
4. Armorer's name: Supervisor:
5. S/N of subsystem:
6. Intervalometer setting; left: Right:
7. Aircraft control setting (left; both; auto):
8. Intervalometer select switch (normal; external arm; SHOULD BE IN EXTERNAL ARM)

1. UNPACKING DISPERSING SUBSYSTEM:

a. Place container on a hard level surface so that it sets firmly on the skids. ____(Placed)

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b. Before opening container visually inspect pressure gauges. (Gauges should read in the operational zone. If in the inoperative zone, the subsystem should be moved to a safe area for disposition. If in the destroy zone, notify personnel designated to perform safing procedures.)

c. Note condition of gauges (fill in - operative, inoperative, or destroy as applicable). ____(Inspected)

No 1 _____ No 2 _____

No 3 _____ No 4 _____

d. Open container ____(Opened)

e. Remove four separately packed "MINE CANNISTERS OPENERS". ____(Removed)

f. Disconnect monitoring cable from "DISPENSER INPUT CABLE" ____(Disconnected)

g. Remove dispenser from container as follows:

(1) Remove three shock mount straps. T-Bolt nuts must be backed off flush with T-Bolt ends. ____(Removed)

(2) Attach 2 legged bridle sling or suitable lifting device to suspension lugsof the dispenser. ____(Attached)

h. Place four (4) mine cannisters openers with dispenser. ____(Placed)

i. Assure that red-flagged (remove before flight) safety pin is securely in place in dispenser. ____(Assured)

j. Transport dispenser anf four (4) mine canisters openers to assembly area. ____(Transported)

k. Replace shock mount straps on shock mounts of container. ____(Replaced)

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l. Replace cover on bottom container. ____(Replaced)

m. Fasten locks on container. ____(Fasten)

n. Remove container from area. ____(Removed)

II. ASSEMBLY OF MINE CANISTER OPENERS ON SUBSYSTEM.

CAUTION: THIS INSTALLATION AND CHECK SHOULD BE DONE IN A LOW ELECTROMAGNETIC RADIATION ENVIRONMENT. IF THE ENVIRONMENT IS NOT KNOWN, CHECK WITH COMMUNICATIONS OFFICER TO INSURE THAT THERE ARE NO TRANSMITTERS OPERATION IN THE IMMEDIATE AREA.

a. Remove nose fairing from aft end of dispenser. ____(Removed)

b. Remove nose fairing adapter from aft end of dispenser. (Retain screws or camlocks for use with shroud assembly.) ____(Removed)

c. Remove mine canister openers from pack. ____(Removed)

d. Inspect four (4) openers for the following:

(1) Absence of shunt and dust cover. ____ ____ ____ ____ (Inspected)

(2) Damaged or cut electrical connections. ____ ____ ____ ____ (Inspected)

(3) Damaged squib. ____ ____ ____ ____ (Inspected)

(4) Bent opener assembly. ____ ____ ____ ____ (Inspected)

(5) Foreign matter in retaining screw or damaged threads.

____ ____ ____ ____

(Inspected)

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*NOTE: ANY OF THE ABOVE DEFECTS IS CAUSE FOR REJECTION OF THE ITEM.

e. Assure that no electrical input is being applied to subsystem.

____(Assured)

f. Assure that red-flagged (remove before flight) safety pin is securely in place in dispenser. ____(Assured)

g. Remove dust covers from canisters. ____ ____ ____ ____

(Removed)

h. Check for foreign matter in threads or damage to threads (mine canister opener mounting holes) ____ ____ ____ ____

(Checked)

CAUTION: SILICONE GREASE MAY BE FOUND IN MINE CANISTER OPENER MOUNTING HOLES. REMOVE BY ANY OBJECT OR TOOL WHICH WILL NOT DAMAGE THREADS.

____ ____ ____ ____

(Removed)

i. Remove dust caps and shunts from mine canister opener electrical connecter ____ ____ ____ ____

(Removed)

*NOTE: SHUNT NORMALLY APPEARS AS A SMALL PIECE OF ALUMINUM FOIL

j. Assemble mine canister opener to canister.

____ ____ ____ ____

*NOTE: ASSURE THE CANISTER ALIGNING PIN IS ALIGNED WITH OPENER SLOT. SCREW IN EACH RETAINING SCREW UNTIL FORWARD EDGE OF OPENER IS FLUSH WITH CANISTER. TIGHTEN SECURELY BY HAND.

NOTE: ASSURE THE CANISTER ALIGNING PIN IS SLIDED INTO OPENER SLOT. SCREW IN EACH RETAINING SCREW UNTIL FORWARD EDGE OF OPENER IS FLUSH WITH CANISTER. TIGHTEN SECURELY BY HAND.

73 k. Push pin on safety wire assembly thru hole on canister.

_____

(Pushed)

l. Verify that pin can't be removed by pulling cable slightly.

_____

(Verified)

m. Remove electrical output connector dust cover which is located in dispenser stiffener.

_____

(Removed)

n. Connect each electrical opener connector to output connections in dispenser stiffener, routing connector thru opening in canister cover.

_____

(Connected)

III. CANISTER OPENER CHECK OUT:

a. Connect squib circuit resistance test cable to test set J-4, squib receptable. NOTE: CABLE IS TO BE FOUND IN COVER OF TEST SET. ___(Connected)

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b. Disconnect the dispenser squib cable from its receptable on the intervalometer. NOTE: FACING THE INTERVALOMETER, CONNECTION IS ON RIGHT VERTICAL SIDE. ___(Disconnected)

c. Connect the squib circuit resistance test cable to the dispenser squib cable plug. ___(Connected)

d. Set the test set squib "CIRCUIT SELECTOR" switch to the "1-OHM" position. ___(Set)

e. Rotate "OHMS ADJUST" dial knob to a setting of 000. ___(Rotated)

f. Depress and hold depressed the test set "OHMS TEST" pushbutton (The test set "NULL" meter should deflect). ___(Depressed)

___(Deflected)

g. Rotate the test set OHMS ADJUST" dial knob until the test set "NULL METER" is not deflected from its center off (or null) position, show a numerical read-out of 067 - 010 which is interpreted to read 0.67 ohms - 0.10 ohms. Release the "OHMS TEST" button. ___(Rotated)

___(Checked)

___(Released)

NOTE: DURING THE PERFORMANCE OF FOLLOWING TESTS, IF "NULL" METER NEEDLE PEGS TO EITHER SIDE, RELEASE TEST BUTTON IMMEDIATELY. PEGGING INDICATES A DEFECT IN ELECTRICAL SYSTEM. FIRST ACTION IS TO REPLACE OPENER. IF PEGGING CONTINUES, REJECT ENTIRE SUBSYSTEM.

h. Set the test set "CIRCUIT SELECT" knob to the number one (1) position. ___(Set)

i. Depress and hold depressed the test set ohms test "PRESS TO-TEST" button and rotate the test set "OHMS ADJUST" dial knob until "NULL METER"

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is nulled. The dial knob numerical read-out should range from 036 minimum to 055 maximum. Release the ohms test press button. ____(Depress)

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____(Null)

(Place actual value in the space) ____(Read)

____(Release)

j. Set the test set "CIRCUIT SELECT KNOB" to the No. 2 position. __(Set)

k. Repeat "i" except numerical read out should be 031 minimum to 051 maximum. ____(Depress)

____(Null)

(Place actual value in the space) ____(Read)

____(Release)

l. Set the test set "CIRCUIT SELECT" knob to the No. 3 position. __(Set)

m. Repeat "i". ____(Depress)

(minimal reading 036) ____(Null)

(maximum reading 055)

(Place actual value in this space) ____(Read)

____(Release)

n. Set the test set "CIRCUIT SELECT" knob to the No. 4 POSITION. __(Set)

o. Repeat "i". ____(Depress)

(minimal reading 031) ____(Null)

(maximum reading 051)

(Place actual value in this space) ____(Read)

____(Release)

p. Set the test set circuit select knob to its off position. ___(Set)

q. Disconnect the test set "SQUIB CIRCUIT RESISTANCE TEST" cable from the dispenser "SQUIB" cable plug. ____(Disconnected)

r. Ground (touch) the shell of the dispenser "SQUIB" cable and plub into receptacle. ____(Grounded) 76

s. Secure cable plug into receptacle. ____(Secured)

t. Disconnect the Squib cable from the test set "J-4" receptacle. ____(Disconnected)

u. Return "SQUIB CIRCUIT RESISTANCE TEST CABLE" to cover of test set. ____(Returned)

IV. INSTALLATION OF SHROUD ASSEMBLY

NOTE: THE SHROUD ASSEMBLY IS INSTALLED ONLY AFTER CONISTER OPENERS HAVE BEEN INSTALLED.

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a. Inspect shroud assembly for visual damage which would preclude assembly of shroud to the subsystem. ____(Inspected)

b. Press shroud assembly into position on the subsystem and fasten in place using the four cam-locks or screws previously removed. ____(Positioned)

____(Fastened)

V. INSTALLATION OF MINE DISPENSER FIRING PANEL IN (UH-1B) HELICOPTER

a. Attach electrical power cable assembly (FSN 1345-999-5710) to CENTER plug on underside of firing panel. ____(Attached)

b. Attach left and right electrical special purpose cable assembly (FSN 1345-999-5709) to underside of firing panel. ____(Right Attached)

____(Left Attached)

c. Emplace firing panel on helicopter control panel. ____(Emplaced)

d. Fasten panel in place with four aircraft screws. (Refer to figure 2-11, TM 9-1345-201/1) ____(Fastened)

e. Check & note polarity of heater blanket receptical ____(Checked)

f. Plug in electrical power cable assembly (FSN 1345-999-5710) into heater blanket receptacle. ____(Plugged in)

g. Fasten the other two cables (FSN 1345-999-5709) one to each Kelle Rack Pylon. ____(Fasten, Right)

____(Fasten, Left)

VI. CHECKOUT OF AIRCRAFT SYSTEM (ELECTRICALLY)

A. UH-1B helicopter mine dispersing firing panel.

1. Connect the "AIRCRAFT PYLON" cable (found in the cover of the XM-68 test set) to J-1 "EXTERNAL INPUT" receptacle of test set.____(Connected) 78

2. Connect the "AIRCRAFT PYLON" cable of the test set to the left aircraft pylon cable on the UH-1B helicopter. ____(Connected)

3. Assure that the UH-1B electrical power cable assembly is properly connected to the heater blanket receptacle. ____(Assured)

4. Assure that the fire panel is set as follows:

(a) "ARM" switch is in "SAFE" position. ____(Assured)

(b) Mode selector switch is in the "BOTH" position ____(Assured)

5. Provide "HEATER RECEPTACLE POWER" using UH-1B helicopter check list.

____(Power Provided)

6. Depress each "PRESS TO TEST" indicator lamp on the firing panel. Each "PRESS TO TEST" lamp should light. ____ ____ ____ ____

(Depressed)

____ ____ ____ ____

(Lit)

7. Depress the test set "READY TEST" switch. The left "READY" lamp on the firing panel should light. ____(Depressed)

____(Lit)

8. Depress the test set "MONITOR TEST" switch. The red "WARNING" lamps on the test set and the firing panel should light. ____(Depressed)

____(Lit)

9. Set the firing panel guarded "ARM" switch to the arm position. The test set amber "ARM" lamp should light. ____(Set)

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10. Depress the firing panel "FIRE" button. The test set amber "PICKLE" button should light. ___(Depress

11. Set the test set "POWER SELECT" switch to the "INT RNL" position. The test set green "POWER ON" lamp should light. ___(Set)

___(lit)

12. Reset the test set "POWER SELECT" switch to its center "OFF" position. The green "POWER ON" lamp should go out. ___(Reset)

___(Lamp Out)

13. Depress "S.F. ARM" switch guard on firing panel. The amber "ARM" lamp on the test set should go out ___(Depressed)

___(Lamp Out)

14. Turn off heater receptacle power. ___(Turned Off)

15. Disconnect the test set "AIRCRAFT PYLON" cable from the left "AIRCRAFT PYLON" cable, on UH-1B helicopter ___(Disconnected)

16. Connect the test set "AIRCRAFT PYLON" cable to the right "AIRCRAFT PYLON" on the UH-1B helicopter. ___(Connected)

17. Repeat step 3. ___(Assured)

18. Repeat step 4. ___(Assured)

19. Repeat step 5. ___(Power Provided)

20. Repeat step 6. ___ ___ ___ ___

(Depressed)

___ ___ ___ ___

21. Repeat step 7 except that right ready lamp on the firing panel should light. ___(Depressed)

___(Lit)

21. Repeat step 7 except that right ready lamp on the firing panel should light. ____(Depressed)

____(Lit)

22. Repeat step 8. ____(Depressed)

____(Lit)

23. Repeat step 9. ____(Set)

____(Lit)

24. Repeat step 10. ____(Depressed)

____(Lit)

25. Repeat step 11. ____(Set)

____(Lit)

26. Repeat step 12. ____(Reset)

____(Lamp Out)

27. Repeat step 13. ____(Depressed)

____(Lamp Out)

28. Repeat step 14. ____(Turned Off)

29. Disconnect the test "AIRCRAFT PYLON" cable from the right "AIRCRAFT PYLON" cable on the UH-1B helicopter. ____(Disconnected)

30. Disconnect the test set "AIRCRAFT PYLON" cable from the test set. ____(Disconnected)

31. Return the test set "AIRCRAFT PYLON" cable to cover of test set. ____(Returned)

B. Checkout of electrical and manual jettison features on UH-1B helicopter.

1. Cock Kellet Rack suspension hooks. ____Cocked)

2. Activate jettison switch and assure that hooks open. ____(Activated)

____ ____(Assured)

3. Re-cord Kellet Rack suspension hooks for manual release of stores.

____ ____(Re-corded)

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4. Activate lever on right side of pedestal labled DANGER-PULL to jettison external stove. ____(Activated)

5. Observe that hooks open. ____ ____

(Observed)

VII. DISPENSER CHECKOUT USING XM-68 TEST SET

a. Assure that dispenser is under helicopter Kellet Rack. ____(Assured)

NOTE: IF INTERNAL POWER IS USED, OMIT STEPS B AND C, BUT IT EXTERNAL POWER IS TO BE USED, STEPS B AND C MUST BE FOLLOWED.

b. Connect either the "AIRCRAFT PYLON" cable or the external power supply adapter assembly to J-1 of the test set depending upon the type of external power selected. ____(Connected)

c. Connect the other end of the test set "AIRCRAFT PYLON" cable to the aircraft pylon cable, or connect the other end of the external power supply adapter assembly to a suitable 28 V DC supply. ____(Connected)

d. Connect the "DISPENSER INPUT" cable to the test set "J-2 DISPENSER" receptacle. ____(Connected)

e. Connect the "DISPENSER INPUT" cable to the dispenser input receptacle. ____(Connected)

f. Connect the "INTERVALOMETER" cable to test set "J-3 INTERVALOMETER" receptacle. ____(Connected)

g. Disconnect the dispenser "SQUIB" cable from its receptacle located on the intervalometer. ____(Disconnected)

WARNING: DO NOT CONNECT DISPENSER "SQUIB" CABLE WITH TEST SET J-4 RECEPTACLE.

h. Connect the test set "INTERVALOMETER" cable to the squib receptacle on the intervalometer. ____(Connected)

i. If external power is to be used, make 28 V DC power available at the power source.

NOTE: IF POWER IS SUPPLIED THROUGH THE INTERNAL POWER SUPPLY ADAPTER THE TEST SET "ARM" AND "PICKLE" LAMPS SHOULD LIGHT. IF POWER IS SUPPLIED THROUGH THE UH-1B FIRING PANEL, OPERATE THE "ARM" SWITCH ON THE FIRING PANEL TO THE "ARM" POSITION. THE TEST SET "ARM" LAMP SHOULD LIGHT.

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j. Set the test set "POWER SELECT" switch to the "EXTERNAL" or "INTERNAL" positions, depending upon power source to be used. ____(Set)

____(Position)

(1) The test set "POWER SELECT" switch to the "EXTERNAL" or "INTERNAL" positions, depending upon power source to be used. ____(Lamp On)

(2) The test set green "READY" lamp should light. ____(Lamp On)

(3) The test set red "MONITOR" lamp should light only if an inoperative canister condition exists. If the "MONITOR" lamp lights, immediately notify personnel designated to perform safing procedures.

____(No Monitor)

k. Test all test set "PRESS-TO-TEST" lamps. (a) each "PRESS TO TEST" lamp should light when depressed. Depress the test set "LAMP TEST" push button. The four test set amber "SQUIB CIRCUITS" lamps should light. ____ ____ ____ ____

(Depressed)

____ ____ ____ ____

CAUTION: FAILURE TO SET INTERVALOMETER SWITCH ("MODE SELECT") TO PROPER POSITION, AS INDICATED IN THE FOLLOWING STEP WILL RESULT IN FAILURE OF THE SUBSYSTEM TO PERFORM AS INDICATED. (Lamps Lit, ARM)

l. Set the switch located on top of the intervalometer to "EXTERNAL ARM".

____(Set)

m. Set the intervalometer "MODE SELECT" switch to the "RIPPLE FIRE 4 CANS/PULSE" position. ____(Set)

n. Remove the dispenser safety pin with red flag. ____(Removed)

o. Set the test set "SAFE ARMED" switch to the "ARMED" position. The amber "ARMED" lamp should light. ____(Set)

____(Lamp Lights)

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p. Momentarily depress the test set "AIRCRAFT OFF PICKLE" switch to the "PICKLE" position. ____(Switch Depressed)

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(1) The test set amber "PICKLE" lamp will light momentarily.

____(Lamp Lights)

(2) The test set green "READY" lamp should go out.

____(Lamp Out)

(3) The test set amber "SQUIB 1" lamp will light momentarily and go out followed by lamps 2,3, and 4 lighting momentarily at about 2 second intervals.

____ ____ ____ ____

(Lights Lighted)

(4) After "SQUIB 4" lamp goes out, the test set green "READY" lamp should light and remain on. ____(Ready Lamp Lighted)

q. Set the intervalometer "MODE SELECT" switch to "RIPPLE FIRE 2 PAIR/PULSE" position. ____(Set)

r. Repeat step p. ____(Switch Depressed)

(1) Repeat Step p (1) will repeat. ____(Lamp Lights)

(2) Repeat step p (2) will repeat. ____(Lamp Out)

(3) The test set amber "SQUIB 1 & 2" lights will light momentarily, followed about 2 seconds later by the "SQUIB 3 & 4" lamps lighting momentarily.

$\frac{\quad}{1}$ $\frac{\quad}{2}$
(Check Lamps Lit)

$\frac{\quad}{3}$ $\frac{\quad}{4}$
(Check Lamps Lit)

(4) After "SQUIB 3 & 4" lamps go out, the test set green "READY" lamp should light and remain on. ____(Lamp On)

s. Set the intervalometer "MODE SELECT" switch to the "MANUAL FIRE 1 CAN/PULSE" position. ____(Set)

t. Depress "AIRCRAFT OFF PICKLE" switch momentarily to "PICKLE"

position; green "READY" lamp goes out, amber "SQUIB 1" lamp and "PICKLE" lamps light momentarily. ___(Depressed)

___(Lamps Lit)

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u. Repeat step t 4 more times; amber "SQUIB 2, 3 & 4" lamps will have lit momentarily and green "READY" light will come on and remian lighted.

___(Dpressed)

2 3 4
(Lamps Lit)

___(Green Ready)

v. Set the intervalometer "MODE SELECT" switch to the "MANUAL FIRE 1 PAIR/PULSE" position. ___(Set)

w. Depress "AIRCRAFT OFF PICKLE" switch momentarily to "PICKLE" position. Green "READY" lamp goes out, amber "PICKLE" lamp goes on momentariyl and amber "SQUIB 1&2" lamps light and remain on.

___(Depressed)

1 2
(Lamps Lit)

x. Depress "AIRCRAFT OFF PICKLE" switch momentarily amber "SQUIB 3 & 4" lamps light and remain on. ___(Depressed)

3 4
(Lamps Lit)

y. Depress "AIRCRAFT OFF PICKLE" switch momentarily; amber "SQUIB 3&4" lamps go cut, green "READY" lamp comes on and remains lighted. ___(Depressed)

3 4
(Lamps Off)

___("READY" On)

z. Insert dispenser "SAFE ARM" pin ("REMOVE BEFORE FLIGHT") into its receptacle. ____)Inserted)

85 aa. Momentarily depress the test set "AIRCRAFT OFF PICKLE" switch to the "PICKLE" position. (1) the test set green "READY" lamp should remain lit.

____(Depressed)

____(Remains Lit)

bb. Set the test set "SAFE ARMED" switch to the "SAFE" position. The test set dispenser "ARMED" lamp will go out. ____(Switch Set)

____(Lamp Out)

cc. Set the test set "POWER SELECT" switch to the center "OFF" position. The test set green "POWER ON" lamp should go out. The test set green "READY" lamp should go out. ____(Switch Set)

____

(Lamps Out)

dd. If external power was used, turn off the power of disconnect source. ____(Power Off)

ee. Disconnect the "INTERVALOMETER" cable from the squib receptacle on the intervalometer. ____(Disconnected)

ff. Momentarily touch metal connector shell of dispenser "SQUIB" cable to intervalometer squig cable receptacle. ____(Touched)

gg. Connect dispenser "SQUIB" cable to intervalometer squib cable receptacle. ____(Connected)

hh. Disconnect all cables from test set and store in cover.

____(Disconnected)

____(Stored)

ii. Assure that test set switches are in following positions:

(1) "POWER SELECT" switch in center "OFF" position. ____(Assured)

(2) Dispenser "SAFE ARMED" switch in "SAFE" position. ___(Assured)

(3) "AIRCRAFT OFF PICKLE" switch in center "OFF" position.

___(Assured)

(4) "CIRCUIT SELECT" switches in "OFF" position. ___(Assured)

___(Switches Se

VIII. AIRCRAFT LOADING PROCEDURES (UH-1B)

87 a. Raise subsystem sufficinetly so that dispenser input receptacle can be mated with aircraft pylon cable, then connect the two together.

___(Raised)

___(Connected)

b. Raise dispenser unitl mounting hooks engage in position to allow closing of the hook assembly. ___(Raised)

c. Close hook assembly. ___(Closed)

d. Tighten sway braces finger tight. ___ ___ ___ ___

(Tightened)

e. Using a screwdriver, turn sway braces one full turn, and then tighten lock nuts. ___ ___ ___ ___

(Turned)

___ ___ ___ ___

(Tightened)

f. Set intervalometer mode "SELECT SWITCH" to its proper setting.

NOTE: THIS INFORMATION WILL BE PROVIDED BY ARMAMENT OFFICER.

___(Setting)

g. Install nose fairing.

(1) Push nose fairing into forward end of subsystem covering intervalometer.

(2) After fairing has been seated on the dispenser flange, rotate approximately 1/2" clockwise.

(3) Lock in place by tightening screws already installed in the dispenser. ___(Installed)

h. Remove safety pin with red flag. ___(Removed)

NOTE: REMOVE BEFORE FLIGHT.

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MISSION COMMANDER CHECKLIST

MINE DISPERSING SUBSYSTEM XM-47

1. Mission
2. Alert Unit to Mission
3. Establish Liaison with Supported Unit
4. Situation (as applicable)
   a. Enemy
   b. Friendly
5. Supported Units General Concept of Operation
6. Reconnaissance
   a. Loading Area
      (1) Size, Shape
      (2) Approach, Departure Routes
   b. Possible Flight Routes (Plan to avoid overflying populated areas if possible)
      (1) IPs
      (2) ACPs
      (3) RPs
      (4) Altitudes
      (5) Jettison Areas
      (6) Landing Area for Visual Check of XM-47 Subsystems
   c. Objective Area
      (1) Targets
         (a) Size, Shape
         (b) Approach, Departure Routes
         (c) Likely Enemy Positions
         (d) Specific Target Assignment to Aircraft Commanders if Possible

(2) Orbit Areas

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7. Mission Planning

a. Mission Commanders Guidance Based on Reconnaissance

b. D day and H hour

c. Loading Data

(1) Number of Sorties

(2) Select Firing Sequence and Airspeed Commensurate with the Desired Mine Density and Pattern Length as Specified in the Mission Request. Note: Use Table A-1(6) UH-1B Helicopter Pattern Capability (U), Table A-2(C) Sequence Selector for UH-1B (U), and Confidential TM 9-1345-201-15/2.

d. Targets

(1) Target Assignments

(2) Formation

(3) Fire Support Plan (as applicable)

(a) Naval Gunfire

(b) Air Force

(c) Artillary

(d) Armed Helicopter

e. Flight Route

(1) RPs

(2) ACPs

(3) IPs

(4) Time Distance and Headings

(5) Fire Support and Escort Plan

f. Loading Area

(1) Times

(2) Number of Aircraft

(3) Loading Formation

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g. Refueling

(1) Location

(2) Time Required for Refueling

h. Schedule of Subsequent Sorties

i. Communications

(1) Supported Unit Frequency and Callsign

(2) XM-47 Aircraft Callsign and Frequency

(3) Gunship Frequency and Callsign

j. General Support Aviation Requirements

(1) Logistics

(2) Command and Control Ship

k. Med Evac

l. Aircraft Maintenance Support

(1) Recovery Unit

m. Proposed Aircraft Release Times

n. Safety

(1) Air to Air Check with Binoculars Between Ships

(2) Detailed Instructions on XM-47 Emergency Procedures

(3) EOD Team

8. Mission Briefing

a. Time and Place

b. Who Will Attend

c. Instructions on Filling out Pilots After Mission Report (XM-47)

9. Mission De-briefing

a. Time and Place

b. Who Will Attend

c. Collection of Completed Pilots After Mission Report (XM-47)

10. Reports

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PLANNING GUIDANCE AND PLANNING TABLES (C)

FOR EMPLOYMENT OF XM-47, MINE DISPENSING SUBSYSTEM

1. (C) Based on mission requirements for specific minefield densities, refer to Table 1, inclosure 1, and select required "FIRING SEQUENCE" and "INTERVAL". NOTE: When selecting firing sequence from Table 1, inclosure 1, do not consider "FIRING SEQUENCES" 3,4,7 or 8 (MANUAL FIRE), these sequences are temporarily suspended. If it is desired to seed 2 areas with one aircraft, firing sequence 5 and 6 will be used.

2. (C) After selecting the "FIRING SEQUENCE", refer to Table 2, inclosure 2, and determine the intervalometer, XM-14, "SWITCH SETTING", and the armament control XM-47 (Mode Select Switch on Firing Panel, Aircraft Console) "SWITCH SETTING". Time over target (seconds) can also be extracted from this table for planning purposes. NOTE: Firing sequences 3,4,7 and 8 (MANUAL FIRE) are temporarily suspended and will not be considered. The toggle switch on the top of the intervalometer XM-14 always be set on "[illegible]".

3. (C) Explanation of the Ripple Firing Sequences:

a. FIRING SEQUENCE 1, Ripple fire four cans/pulse, mode select switch, both. The four canisters on both sides of the aircraft will automatically fire in sequence with 2 seconds between firings.

b. FIRING SEQUENCE 2, Ripple fire two pairs/pulse mode select switch both. Canisters 1 and 2 will fire simultaneously, followed automatically by canisters 3 and 4 simultaneously. on both sides of the aircraft, with 2 seconds between firings.

c. FIRING SEQUENCE 5, Ripple fire four cans/pulse, mode select switch, left. (Can be used when it is desired to seed 2 areas with one helicopter). The four canisters on the left hand side of the aircraft, will automatically fire in sequence with 2 seconds between firings. When it is desired to fire the canisters on the right hand side of the aircraft, set the mode select switch on the aircraft firing panel to both.

d. FIRING SEQUENCE 6, Ripple fire two cans/pulse, mode select switch, left. (Can be used when it is desired to seed 2 areas with one helicopter). Canisters 1 and 2 will fire simultaneously, followed by canisters 3 and 4 simultaneously on the left side of the aircraft with 2 seconds between firings. When it is desired to fire the canisters on the right hand side of the aircraft, set the mode select switch on the aircraft firing panel to both.

e. FIRING SEQUENCE 9, Ripple fire four cans/pulse, mode select switch, auto. All eight canisters will automatically fire in sequence with 2 seconds between firings.

95 TABLE 1: (C). UH-1B Helicopter Pattern Capability (U). Extracted from (Table A-1(C) T.O. 1345-201-15/2)

Desired density (mines/meter)	Effective pattern length (meters)	Effective width (meters)	Select firing sequency	Fly airspeed (KIAS)
1 - 2	149 - 164	30 - 40	7	100 - 110
2 - 3	869 - 950	30 - 40	9	100 - 110
	406 - 446	30 - 40	5	100 - 110
	102 - 134	30 - 40	7	70 - 90
3 - 4	607 - 780	30 - 40	9	70 - 90
	325 - 365	30 - 40	5	80 - 90
	75 - 89	30 - 40	7	50 - 60
	149 - 164	30 - 40	3 or 8	100 - 110
4 - 5	443 - 510	30 - 40	9	50 - 60
	252 - 277	30 - 40	6	100 - 110
	243 - 284	30 - 40	5	60 - 70
	119 - 134	30 - 40	3 or 8	80 - 90
5 - 6	200 - 226	30 - 40	6	80 - 90
	406 - 446	30 - 40	1	100 - 110
	102	30 - 40	3 or 8	70
	203	30 - 40	5	50
6 - 7	176	30 - 40	6	70
	365	30 - 40	1	90
	89	30 - 40	3 or 8	50
7 - 8	151	30 - 40	6	60
	325	30 - 40	1	80
	149 - 164	30 - 40	4	100 - 110
8 - 9	277	30 - 40	2	110
	284	30 - 40	1	70
	134	30 - 40	4	90
	75	30 - 40	3 or 8	50
9 - 10	252	30 - 40	2	100
	126	30 - 40	6	50
	243	30 - 40	1	60
	119	30 - 40	4	80
10 - 13	200 - 226	30 - 40	2	80 - 90
	203	30 - 40	1	50
	102	30 - 40	4	70
13 - 16	151 - 176	30 - 40	2	60 - 70
	75 - 89	30 - 40	4	50 - 60

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TABLE 2: (C). Sequence, Select for UH-1B (C). Extract from (Table A-2 (C) TM 9-1345-201-15/2).

NOTE: Switch to "EXT AR" on intervalometer X-14.

Firing Sequence No.	Set intervalometer X-14	Set armament cont X-47 (Mode select switch)	Time over target (seconds)
1	Ripple Fire Four Cans/pulse	Both	8.9
2	Ripple Fire 2 Pairs/pulse	Both	4.9
3	Manual Fire 1 Can/pulse	Both * (1)	2.9
4	Manual Fire 1 Pair/pulse	Both * (1)	2.9
5	Ripple Fire Four Cans/pulse	Left * ‡	8.9
6	Ripple Fire 2 Pairs/pulse	Left * ‡	4.9
7	Manual Fire 1 Can/pulse	Left * ‡ (1)	2.9
8	Manual Fire 1 Pair/pulse	Left * ‡ (1)	2.9
9	Ripple Fire Four Cans/pulse	Auto	16.9

* To Fire Right Store, Switch To Both When Left Empty.

‡ NOTE: Patterns indicated provide capability to emplace minefield at more than one target area (Two areas for sequences 4, 5, 6; four areas for sequences 3, 8; eight areas for sequence 7).

(1) Firing Sequence 3, 4, 7 and 8 Temporarily Suspended.

DEPARTMENT OF THE ARMY
HEADQUARTERS, 12TH COMBAT AVIATION GROUP
APO 96491

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CONSIDERATIONS IN AIRLIFTING THE 155MM HOWITZER
BY CH-47A HELICOPTER

1. CAPABILITIES: The CH-47A helicopter can lift the 155mm howitzer for short distances if certain items are removed from both the weapon and the aircraft and if the aircraft carries minimum fuel. Reducing the weight of both weapon and the aircraft is necessary to remain within the maximum allowable gross weight of the CH-47A which is 33,000 pounds. Removing equipment from the howitzer as shown in the mission profile will enable a radius of action of either 25 km's or 45 km's depending on whether or not a lightweight skid-brace support device is substituted for the wheel assemblies. Leaving the wheels installed, a radius of 25 km is possible if a refueling point is established at the PZ. If fuel is available both in PZ and LZ, the radius of action may be extended to 50 km. If the wheels are removed, a radius of action of 45 km is possible with fuel available at PZ only or the radius of action may be extended to 90 km with fuel available at both PZ and LZ. Sorties required to move a 155mm battery are estimated to be 26. At the completion of the lift, the entire battery and 1000 rounds of 155mm ammunition will be in position. Sorties are shown below :

Sortie Number	Type Load
1 - 6	Howitzers (lightened)
7 - 12	Crew, equipment, & 40 rounds 155mm/ ammo each
13	1/4 ton truck, 3/4 ton trailer, FDC
14	3/4 ton truck, 1/4 ton trailer, 1500 lbs equip.
15 - 26	64 rounds 155mm ammunition per load.

ANNEX K

2. MISSION PROFILE:

a. Weapon Weights:

Basic Weight		12,700
Less Jack Plate	85	
Less Trail Spades	365	
Less Splinter Shields	100	
Less Breech Mechanism	85	
Less Jack Assembly	100	
Proposed Light Weight		11,965
Less Wheels, Plus Brace	1000	
Lightest Weight		10,965

b. Aircraft Weights (Mission #1, 25 km)

Basic Weight		19,000
Less Removable Items	230	
Plus 3 Crew		600
Plus Lightweight Howitzer		11,965
Mission #1 Weight (25 km)		31,335

c. Aircraft Weights (Mission #2, 45 km)

Basic Weight		19,000
Less Removable Items	230	
Plus 3 Crew		600
Plus Lightest Howitzer		10,965
Mission #2 Weight		30,335

d. Summary Profile:

Mission	Type Howitzer	Total A/C Fuel	Less Reserve	Useable	Round trip	One Way
1.	155w/wheels	1500	500	1000	25km	50km
2.	155w/o wheels	2500	700	1800	45km	90km

3. CONSIDERATIONS:

a. Fuel consumption of the CH-47A approximates 2100 pounds of fuel per hour at maximum gross weight (33,000 pounds) condition. Maximum forward airspeed at maximum gross weight is 70-80 knots with an external sling load and flying at lower altitudes.

b. The stripped CH-47A will require UH-1C gun ship escort since guns and gunners are removed for the 155mm howitzer lift mission. Other items removed include tool boxes, ammunition, spare parts, extra oil, rations, survival gear, roller conveyors, and cargo tie-downs for a savings of approximately 1000 pounds. Installed items not essential to the mission which can be removed are troop seats (102 lbs), heater-blower system (64 lbs) and ARC 102 radio (64 lbs) for a savings in installed weight of 230 pounds.

c. The wheels of the howitzer (1230 lbs) can be replaced by a locally manufactured skid trace assembly constructed of pierced steel plank and angle iron. The skid is attached at the axles and provides stability until the weapon is jacked up into the firing position. The skid assembly has an estimated weight of 200 pounds. One has been fabricated and tested by the 1st Infantry Division Artillery.

d. Rigging equipment consists of two 9 foot slings, two 16 foot slings (all 13,500 lb capacity) and a 40,000 lb capacity endless sling (doughnut). Ammunition, howitzer components, and section equipment can be carried using standard A-22 cargo bags with slings. Lifted units should requisition these slings and A-22 cargo bags as is done for 105mm batteries. Supporting CH-47A companies can provide the airlift equipment until the requisitions are filled.

e. The airlift of 155mm howitzer by CH-47A presents the following limitations:

(1) Radius of action is either 25km, howitzer w/wheels or 45km, howitzer w/o wheels and with skids.

(2) Time for preparation of the howitzer for lift from the PZ and to fire after arrival in the LZ is approximately 15 minutes per tube in each area.

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(3) Preparation of the CH-47A requires approximately twenty minutes to lighten ship.

(4) A refueling point must be established at PZ or LZ or both, depending on the range required.

4. CONCLUSIONS:

a. That 155mm howitzer batteries can be airlifted by CH-47A helicopters subject to the stated limitations.

b. That training and detailed planning is required by both artillery and aviation units.

Incl 1

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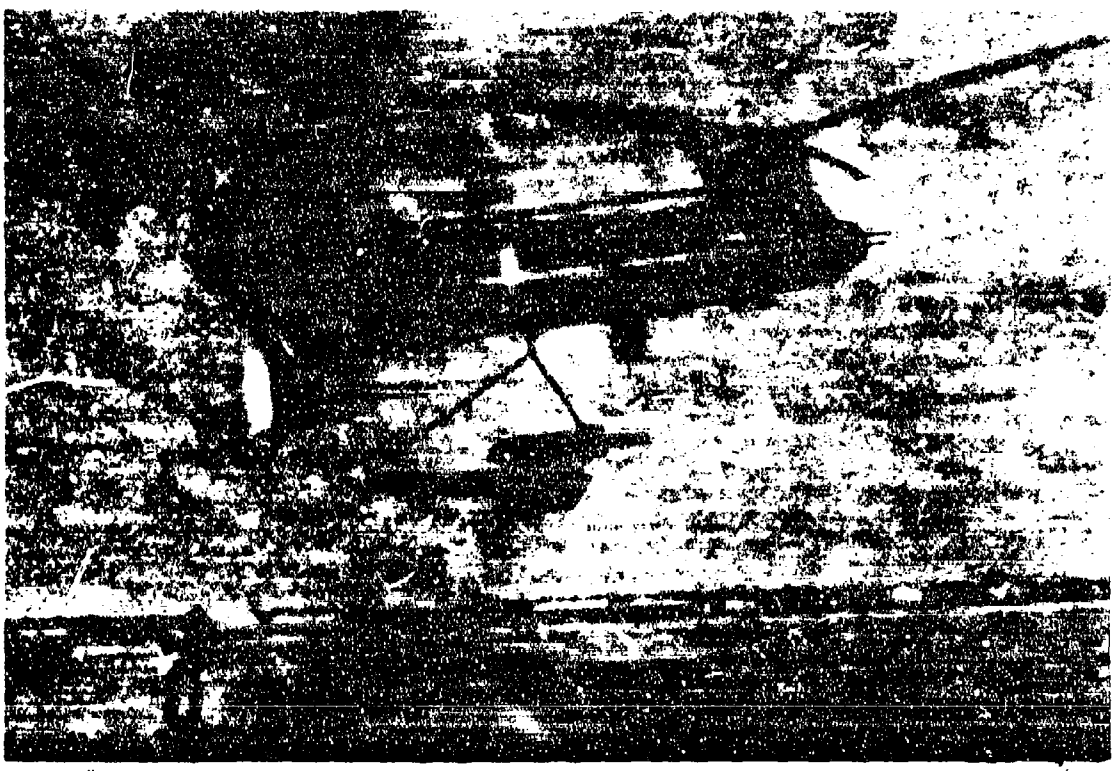
CH-47 SLING LOADING 155MM HOWITZER (TOWED)



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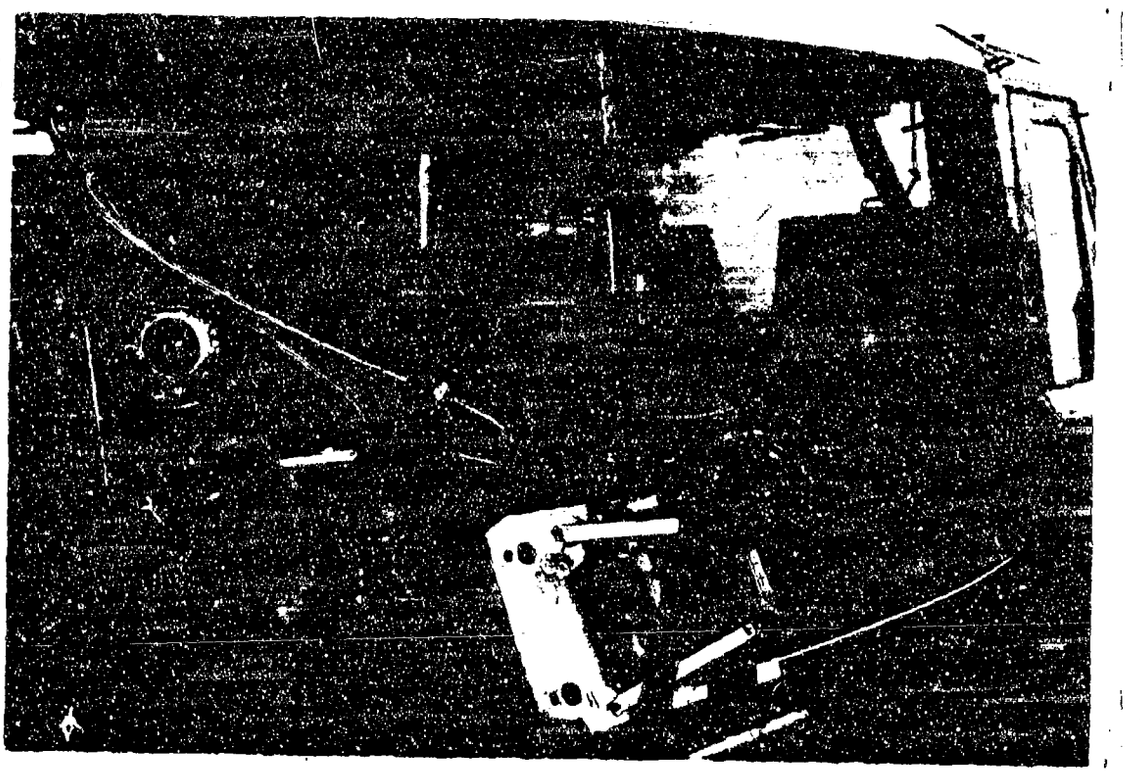
EMERGENCY ENGINE OIL COOLING SYSTEM FOR THE UH-1D HELICOPTER



ANNEX L

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12TH COMBAT AVIATION GROUP STATISTICS

OPERATIONAL HOURS

RW	FW	TOTAL
59,048	30,394	89,442

SORTIES FLOWN

RW	FW	TOTAL
186,064	33,498	219,562

COMBAT SORTIES FLOWN

RW	FW	TOTAL
97,675	3,109	100,784

PASSENGERS CARRIED

RW	FW	TOTAL
334,468	93,219	427,687

CARGO TRANSPORTED (TONS)

RW	FW	TOTAL
32,799	7,759	40,558

A/C HIT BY GROUNDFIRE

RW	FW	TOTAL
217	42	259

COMBAT LOSSES (ACFT)

RW	FW	TOTAL
4	0	4

AMMUNITION EXPENDED

7.62mm	40mm	2.75 "FFAR"
7,156,673	54,231	31,312

ANNEX M

ENEMY LOSSES/DAMAGE INFLICTED

KIA (BODY COUNT)————————479

KIA (ESTIMATED)————————164

VC CAPTURED————————2

STRUCTURES DESTROYED————416

SAMPANS DESTROYED/SUNK——1073

SAMPANS DAMAGED————————30

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CASUALTIES MEDICALLY EVACUATED (ARVN & US)

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CASUALTIES (12TH CMBT. AVN. GP)

	OFF	WO	EM	TOTAL
KIA	4	7	14	25
WIA	9	11	33	53
MIA	0	0	0	0